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The effect of TTM-based nutrition education on decisional balance, self-efficacy and processes of change for fat intake

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Abstract

Purpose – The purpose of this study is to determine how transtheoretical model (TTM) constructions change through nutrition education for fat intake modification among overweight and obese women living in Shazand city, Iran.

Design/methodology/approach – A semi-experimental design with intervention and control groups (50 women in each group) was performed. TTM constructions for dietary fat intake were measured through a questionnaire in four phases: before the intervention, immediately, one month and six months after the intervention. Participants in two groups were classified into inactive and active subgroups, based on their determined stage of change. Then in the intervention group, each subgroup received a separate education program of five or eight sessions for the active and inactive subgroups, respectively.

Findings – The intervention resulted in significant progress in participants' stage of change compared to the control group ($p = 0.002$). Also, it resulted in an increase in the self-efficacy and decisional balance scores in both of the intervention subgroups, with these effects being more pronounced in the inactive subgroup, and these significant differences, compared to the control group, remained in the third and fourth phases. The intervention also positively impacted the behavioral processes, but this effect was not so long-lasting and decreased after six months.

Originality/value – The results indicated the intervention effectiveness and the necessity of planning educational interventions to change fat consumption behavior. This study provides further insight into effective and sustainable nutrition education strategies based on behavioral change stages rather than

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traditional approaches. These methods should be used to design group interventions to change individuals' health behavior in future works.

Keywords Transtheoretical model, Nutrition education, Fat intake
Paper type Research paper

Introduction

The excess consumption of fatty acids, especially trans-fatty acids (TFAs) and saturated fatty acids (SFAs) has been associated with an increased risk of overweight and obesity, heart disease, stroke, diabetes, some cancers and other noncommunicable chronic diseases (Lichtenstein, 2014; Institute of Medicine, 2006). Dietary Guidelines recommend consuming no more than 20–35% of calories from fat (Institute of Medicine, 2005). Reducing dietary fat is an important part of the effort to dietary improvement. This is because of the association between fat intake and serious health risks (National Research Council, 1989). Although studies have shown that fat consumption in Iran is less than 30% of total energy intake, its consumption has increased over the recent decades (Ghassemi *et al.*, 2002; Heidari *et al.*, 2019; Kimiagar *et al.*, 1998). Furthermore, the type of fat consumed is not a healthy type of fat, and trans fat intake is more than five times the standard level (World Health Organization (WHO), 2018).

Behavioral and/or educational interventions, either alone or in combination, have been done to reduce dietary fat intake. The results of these studies indicate that interventions that focus solely on education may be less effective than interventions targeting behavioral change (Ashton *et al.*, 2019; Stanulewicz *et al.*, 2020). Theory-based interventions are more successful in behavioral changes than interventions that have no theoretical basis (Wilroy and Knowlden, 2016). Theory-based interventions help identify which constructs are causally related to behavior and how the behavior change occurs (Michie and Prestwich, 2010; Wilroy and Knowlden, 2016). The transtheoretical model (TTM) is one of the most commonly used theories in changing health behaviors (Finck Barboza *et al.*, 2013).

TTM, which was proposed for the first time by Prochaska and DiClemete (Prochaska and DiClemente, 1983), is one of the most commonly used theories in nutrition and physical activity behavior change (Finck Barboza *et al.*, 2013). The TTM acknowledges a change in behavior as a process which develops over time and within this process, a person goes through five stages (Callaghan *et al.*, 2010), including: (1) Pre-contemplation, when a person does not have a plan to change his/her behavior in the next six months; (2) Contemplation, when the person aims to change his/her behavior within the following six months; (3) Preparation, when a person decides to change his/her behavior by the next month; (4) Action, when the person has made a change in his/her behavior and lifestyle over the past six months and (5) Maintenance, is the stage when in addition to making a change in the harmful behavior, the person also has avoided going back to previous stages . Moving through these stages is not linear and can be reversible (DiClemente *et al.*, 1991; Prochaska and DiClemente, 1983).

The TTM structure comprises three other constructs in addition to the five stages of change, including decisional balance, self-efficacy and processes of change (Di Noia *et al.*, 2006). A person considers the pros and cons of a change in behavior before proceeding with the change. Decisional balance means establishing a computational balance in a person's mind between the pros and cons of changing a harmful behavior. It is evident that shifting this balance toward the pros of the change leads to progress forward in the stages of change (Rossi *et al.*, 2001). Self-efficacy means a person's confidence in his ability to stay committed to the changed behavior in situations he may feel happy, depressed or stressful is called self-efficacy (Bandura, 1977). Based on the TTM, regardless of the type of behavior that a person

intends to change, there are specific 10 processes called the processes of change or the experiential processes, which can be used to design and provide a strategy to help change a behavior (Henry *et al.*, 2006). These processes include five cognitive processes (consciousness-raising, dramatic relief, environmental re-evaluation, social liberation and self-re-evaluation) and five behavioral processes (counterconditioning, stimulus control, helping relationships, reinforcement management and self-liberation) (Prochaska and Velicer, 1997). This model claims that people have different needs for counseling and training based on their different stages of change and appropriate strategies used based on the stage of change, self-efficacy, and pros and cons of changing (Armitage *et al.*, 2004; Mhurchu *et al.*, 1997).

Studies have shown that better adherence to dietary recommendations has been associated with improvement in the stage of change, self-efficacy and individuals' decisional balance (Guess *et al.*, 2016; Partridge *et al.*, 2017; Steptoe *et al.*, 2003; Tassell and Flett, 2005). Also, with progress in the stage of change, the cons of change decrease and pros increase (Plotnikoff *et al.*, 2009). TTM has been used in nutritional intervention for successfully changing health risk behaviors, including high-fat diets (Brick *et al.*, 2019; de Menezes *et al.*, 2015; Finckenor and Byrd-Bredbenner, 2000; Frenn *et al.*, 2003; Greene *et al.*, 2013), weight loss (de Freitas *et al.*, 2020; Hoke and Timmerman, 2011) and increase fruit and vegetable intake (Di Noia and Thompson, 2012).

The specific objectives of this study are the investigation of the effect of a nutritional education program for fat intake modification, based on the TTM on: (1) the stage of change, (2) decisional balance, (3) self-efficacy and (4) processes of change for fat intake modification among overweight and obese women living in Shazand city, Markazi province, Iran.

Method

Design

The study used a semi-experimental, single-blind design including intervention and control groups with a 1:1 allocation that participants were unaware of the group to which they belonged. A semi-experiment or quasi-experiment is a type of research design that attempts to establish a cause-and-effect relationship. The main difference with a true experiment is that the groups are not randomly assigned (Rogers and Revesz, 2020). Random assignment to intervention or control group was not possible because we wanted the people in the two groups to have no contact and no exchange information, so participants were recruited from two urban health centers in Shazand city, Markazi province, Iran. There are four health centers in Shazand city. From these four urban health centers, numbers 1 and 2 were selected because these two health centers are geographically far apart and limited the possibility of any contact between the participants. Also, the population covered by these two centers was socioeconomically similar and a good sample of the whole urban community. Between these two centers, center number 1 was randomly selected as the intervention group and center number 2 as the control group. Assessments were performed at four points: preintervention, immediately after intervention, one and six months after the intervention. All data were collected in the first six months of 2018.

Sample

The sample size for this study was calculated using the formula $n = \frac{2\delta^2(Z_{1-\frac{\alpha}{2}}+Z_{1-\beta})^2}{(\mu_1-\mu_2)^2}$ with $\alpha = 0.05$ and $\beta = 0.2$ (power of study = 80%), 40 people were calculated for each group. Taking into account 20% of the sample loss in each group, the sample size in each experimental group was determined to be 50 people. The sample consisted of 100 overweight

and obese women (body mass index >25 Kg/m^2) aged between 30 and 59 years that their information was recorded in urban health centers in Shazand city. Among the eligible women, 50 participants were randomly selected from health center 1 as the intervention group and 50 participants were randomly selected from health center 2 as the control group. All of the participants were literate and lived in the study area, physically and mentally healthy, not pregnant and not lactating. Those who used weight loss drugs or supplements in the past month and exercised professionally were not included in the study. Also, during the study, women who did not participate in more than one training session or failed to continue cooperation were excluded.

Initial assessment

In the initial visit, a general information questionnaire was handed out to the participants to be filled. Then the TTM constructs questionnaire was filled through face-to-face interviews with the participants. This questionnaire was composed of four subscales: (1) The stages of change scale designed by Green *et al.* (1994) and validated by Ounpuu (Ounpuu, 1997; Ounpuu *et al.*, 2000); (2) The 13-item self-efficacy questionnaire (Ounpuu, 1995; Ounpuu *et al.*, 2000); (3) The 12-item decisional balance scale (Ounpuu, 1997; Ounpuu *et al.*, 2000) and (4) The processes of change questionnaire (Ounpuu, 1997; Ounpuu *et al.*, 2000). Content and face validity of these questionnaires have been assessed and validated in Tehranian women to correlate with Iranian culture (Karimzadeh, 2012). After the initial assessment, the participants' stage of change for dietary fat modification was determined. The participants in both the intervention and control groups were further divided into "Inactive" (the three initial stages of behavior change) and "Active" (the two final stages of behavior change) subgroups. In the intervention group, 21 participants were categorized in the active and 29 in the inactive subgroup. Also, in the control group, 20 participants were categorized as active and 30 in the inactive subgroups. The participants' division into active and inactive subgroups in each of the four phases of the study was based on the same baseline stage.

Intervention phase

All the intervention group attended an educational program weekly. The three initial sessions were the same for all of the participants in the intervention group. Then, the active subgroup attended two separate sessions, while five separate sessions were held for the inactive subgroup. The educational materials were designed based on the initial needs assessment of the participants, their stage of behavior change and the related constructs in each stage of change (Glanz *et al.*, 2008), nutritional habits of people living in the area, available teaching methods and equipment, literacy rates of the participants, educational domains (cognitive, observational and functional) and also consulting books and other references. The details of the training sessions are described in Table 1. After completing the educational sessions, the TTM constructs questionnaire was filled again in three separate phases: immediately, one month and six months after the intervention. Obviously, the control group did not receive any nutritional training and only received routine care from the health center. At the end of the study (after six months of follow-up), nutrition education brochures and booklets were given to the control group.

A process evaluation was performed by an independent researcher not involved in the delivery of the intervention. Evaluated indicators included: percent of women attending entire training, percent of attendance compared with that expected, percent of workshop components fully covered, the duration of educational intervention compared with that expected, percent of participants' satisfaction with training sessions and percent of instructor' satisfaction with training sessions.

Session 1 – Target group: All the participants in active and inactive intervention subgroups
Raising the consciousness of women about different kinds of fat, the differences between them, the consequences of high saturated and trans fat intake, choosing the right cooking oil and the recommended amount
Utilized constructs: Consciousness-raising, dramatic relief
Session 2 – Target group: All the participants in active and inactive intervention subgroups
Raising consciousness and abilities of women in reading and understanding food labels, improving the abilities of women in estimating and measuring food serving sizes on the labels with an emphasis on fats
Utilized constructs: Consciousness-raising, skill training
Session 3 – Target group: All the participants in the active and inactive intervention subgroups
Improving cooking skills to prepare tasty low-fat foods, getting to learn about the social norms for consuming low-fat foods
Utilized constructs: Helping relationships, counterconditioning, self-liberation and social liberation
Session 4 – Target group: The inactive subgroup
Empowering women to get help from their relatives to succeed in following a low-fat diet. Raising women's awareness and attitude about the consequences of high-fat consumption and the effects of consuming low-fat foods by them on the family and society
Utilized constructs: Self-efficacy, helping relationships, dramatic relief, environmental re-evaluation
Session 4 – Target group: The active subgroup
Empowering women to get help from their relatives for consuming low-fat foods, empowering women in substituting low-fat foods for high-fat foods, empowering women to control the stimuli that cause eating high-fat foods
Utilized constructs: Self-efficacy, helping relationships, self-liberation, stimulus control
Session 5 – Target group: The inactive subgroup
Raising women's awareness and abilities in self-evaluating their weight and general health status after consuming low and high-fat foods
Utilized constructs: Self-re-evaluation
Session 5– Target group: The active subgroup
Empowering women to control or change nutritional habits, improving women's skills to entertain themselves
Utilized constructs: Self-liberation, reinforcement management, counterconditioning, helping relationships
Session 6 – Target group: The inactive subgroup
Raising women's awareness and abilities about obstacles, strategies and benefits of reducing fat intake, empowering women to review their eating habits and providing strategies to improve them
Utilized constructs: Decisional balance, self-liberation
Session 7 – Target group: The inactive subgroup
Raising women's awareness about the low-fat alternatives to high-fat foods, empowering women to recognize and control signals for hunger and food intake, not the mood swings
Utilized constructs: Self-efficacy, self-liberation, counterconditioning
Session 8 – Target group: The inactive subgroup
Empowering women in substituting low-fat foods for high-fat foods
Utilized constructs: Self-liberation, reinforcement management, self-efficacy

Table 1.
Educational and constructive aims intended for each session

Statistical analysis

After using the SPSS software ver. 20 with a significance level of $p < 0.05$, to compare the qualitative variables (education, employment status, ownership status, etc.) among groups, the chi-square test was used. Comparisons were made once intergroup and once intragroup. In the intergroup comparison, each subgroup was compared with its respective control, and in the intragroup comparison, the data before and after the intervention were compared. Wilcoxon or paired T-test was utilized to assess the intragroup differences between variables. Independent samples T-test and the Mann–Whitney tests were used to compare the intergroup differences of variables.

Results

Participants' characteristics

In this study, 83 women (40 in the intervention and 43 in the control group) with an average age of 39.6 (±6.8) years and an average body mass index of 31.3 (±3.6) Kg/m^2 completed the study; 84% of all participants were married, 72% were housewives and most (93%) of them were relatively low economically; 15% of women had a college education, and 85% had less education than college. There was no significant difference between the intervention and control groups' characteristics and between active and inactive subgroups.

The stages of change in studied women

The stage of change in the participants was assessed over four phases, as presented in Table 2. At the beginning of the study, the intervention group was composed of 21 (42%) participants in the active and 29 (58%) in the inactive subgroup. Also, in the control group, 20 (40%) participants were categorized as active and 30 (60%) in the inactive subgroups. There was not a significant difference in stages of change between the two groups. Right after the educational intervention, stages of change in the intervention groups were improved, so that 70.7% of the participants were in the active subgroup and 29.3% of them in the inactive subgroup, which was significantly different from the control group ($p = 0.002$). This difference was maintained in the third and fourth phases of follow-up assessments ($p = 0.002$ and 0.004, respectively). Furthermore, an intragroup comparison between different phases of assessment in the intervention group showed a significant difference in the stages of change after the intervention compared to before it. Differences in the control group were not significant in any of the study phases (Table 2).

Model's constructs score

A comparison between the intervention and control groups and their subgroups was performed using Mann–Whitney or independent samples T-test. Tables 3 and 4 illustrate the TTM constructs over four phases of assessments.

	Group							
	Control group N (%)				Intervention group N (%)			
Stage of change	Phase 1 $n = 50$	Phase 2[a] $n = 43$	Phase 3[b] $n = 43$	Phase 4[c] $n = 43$	Phase 1[d,e,f] $n = 50$	Phase 2[a,d] $n = 41$	Phase 3[b,e] $n = 41$	Phase 4[c,f] $n = 40$
Precontemplation	2 (4)	1 (2.3)	1 (2.3)	1 (2.3)	1 (2)	1 (2.4)	1 (2.4)	1 (2.5)
Contemplation	11 (22)	7 (16.3)	8 (18.6)	6 (14)	8 (16)	2 (4.9)	1 (2.4)	1 (2.5)
Preparation	17 (34)	19 (44.2)	18 (41.9)	18 (41.9)	20 (40)	9 (22)	10 (24.4)	8 (20)
Inactive stage	30 (60)	27 (62.8)	27 (62.8)	25 (58.2)	29 (58)	12 (29.3)	12 (29.3)	10 (25)
Action	6 (12)	5 (11.6)	5 (11.6)	6 (14)	6 (12)	16 (39)	12 (29.3)	8 (20)
Maintenance	14 (28)	11 (25.6)	11 (25.6)	12 (27.8)	15 (30)	13 (31.7)	17 (41.5)	22 (55)
Active stage	20 (40)	16 (37.2)	16 (37.2)	18 (41.8)	21 (42)	29 (70.7)	29 (70.7)	30 (75)

Note(s): Participants' stages of change were analyzed over four phases of assessments using the chi-square test

The same superscripts in each phase of the study show a significant difference in the stages of change in those two phases

Differences between groups: [a]: p-value = 0.002, [b]: p-value = 0.002, [c]: p-value = 0.004

Intragroup differences (in intervention group): [d]: p-value = 0.008, [e]: p-value = 0.001, [f]: p-value = 0.003

Table 2.
The stages of change for the participants over four assessment phases in the intervention and control groups

Table 3.
The mean and standard deviations of the TTM constructs score in the inactive subgroups of both intervention and control over four phases of the assessment process

	Group							
	Inactive subgroup of the control group Mean (SD)				Inactive subgroup of the intervention group Mean (SD)			
Variables	Phase1 $n = 30$	Phase2 $n = 24$	Phase3 $n = 24$	Phase4 $n = 24$	Phase1 $n = 29$	Phase2 $n = 22$	Phase3 $n = 22$	Phase4 $n = 22$
Self-efficacy score	45.9 (8.6)	46.2[a] (6.9)	45.3[b] (6.8)	46[c] (5.5)	46.3[h] (9.6)	51.4[a,h] (7.9)	51.9[b] (6.9)	51[c] (7.9)
Decisional balance	0.97 (0.83)	1.1 (0.91)	1.1 (0.88)	1.1[d] (0.89)	0.97[i] (0.95)	1.4[i] (1)	1.3 (0.98)	1.7[d] (1)
Cons-low fat diet	16 (5.3)	15.5 (4.6)	15.3 (5.1)	15.4 (5.2)	15.5[j] (5.6)	12.9[j] (3.9)	14.3 (4.1)	13.9 (3.7)
Pros-low fat diet	16.3 (4.2)	16.6 (4.3)	16.1 (4.3)	16[e] (4.1)	15.9 (3.6)	16.5 (4.4)	17 (4.2)	18.4[e] (4)
Cognitive processes	20.3 (2.7)	20.5[f] (2.8)	20.4 (3)	20.4 (2.9)	20.6[k] (3.2)	22.1[f,k] (1.2)	21.5 (1.7)	21 (1.9)
Behavioral processes	19.5 (3.8)	19.8 (2.9)	19.8[g] (3.1)	19.6 (3.2)	19.2[l] (4.1)	21.5[l] (2.8)	22[g] (4.1)	20.2 (2.3)

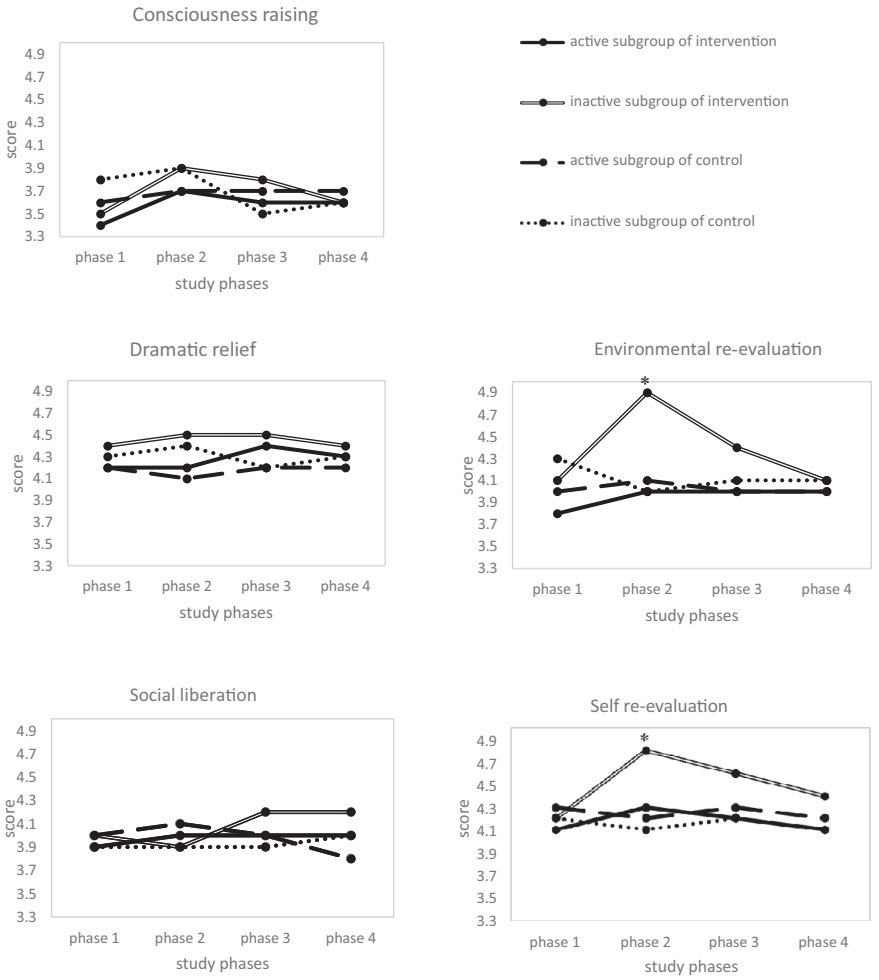
Note(s): Values with the same superscripts identify significant differences of the variable (p-value < 0.05)
Superscripts a, b, c, d, e, f, g show the differences between the groups, and superscripts h, i, j, k, l show the intragroup differences in the intervention group

Table 4.
The mean and standard deviations of the TTM constructs score in the active subgroups of both intervention and control over four phases of the assessment process

	Group							
	Active subgroup of the control group Mean (SD)				Active subgroup of the intervention group Mean (SD)			
Variables	Phase1 $n = 20$	Phase2 $n = 19$	Phase3 $n = 19$	Phase4 $n = 19$	phase1 $n = 21$	Phase2 $n = 19$	Phase3 $n = 19$	Phase4 $n = 18$
Self-efficacy	46.4 (6.3)	46.6 (6)	46.5 (8.5)	47.4[a] (7.4)	47.6 (8.9)	49.1 (7.8)	50.9 (7.7)	52.6[a] (7)
Decisional balance	1.1 (0.79)	1 (0.69)	1.1[b] (0.71)	1.1 (0.83)	1 (0.57)	1.4 (0.68)	1.6[b] (0.83)	1.4 (0.79)
Cons-low fat diet	13.8 (3.8)	13.7 (3.8)	13.5 (4)	13.5 (4.4)	14.6 (4.3)	13.4 (3.4)	13.2 (4.1)	14.4 (4.4)
Pros-low fat diet	15.5 (3.6)	16.1 (4.4)	15.4[c] (3.7)	15.4[d] (3.8)	15.8 (2.6)	16.6 (4.4)	17.7 (3.4)	17.8[d] (2.9)
Cognitive processes	20.2 (3.3)	20.3 (3.5)	20.5 (3.4)	20.2 (3.3)	19.6 (2.7)	20.4 (2.6)	20.3 (2.5)	20 (2.5)
Behavioral processes	19.7 (3.1)	19.8[e] (5.1)	19.8[f] (3.7)	19.9[g] (3.5)	20[h] (2.6)	22.9[e,h] (4.1)	22.1[f] (3.8)	20.4[g] (3.7)

Note(s): Values with the same superscripts identify significant differences of the variable (p-value < 0.05)
Superscripts a, b, c, d, e, f, g show the differences between the groups, and superscript h shows the intragroup difference in the intervention group

The inactive subgroups: After the intervention, there was a significant increase in self-efficacy ($p = 0.02$) and the sum of cognitive processes score ($p = 0.02$) in the inactive subgroup of the intervention group, which was significantly different from those of respective controls. In the case of self-efficacy, the difference remained significant in the third and fourth phases of the study ($p = 0.002$ and 0.01, respectively). But, differences in cognitive processes were not significant in the third and fourth phases of the study. The changes in cognitive and behavioral processes score are shown in Figures 1 and 2. It is well known in these charts that in the second phase, environmental re-evaluation and self-re-evaluation scores increased in the inactive subgroup, which were significant compared to the inactive subgroup of the



Note(s): The star sign in each phase of the study indicates a significant difference between the subgroup in the intervention and it's respective subgroup in the control group in the same phase

Figure 1.
Cognitive processes of change score across study phases

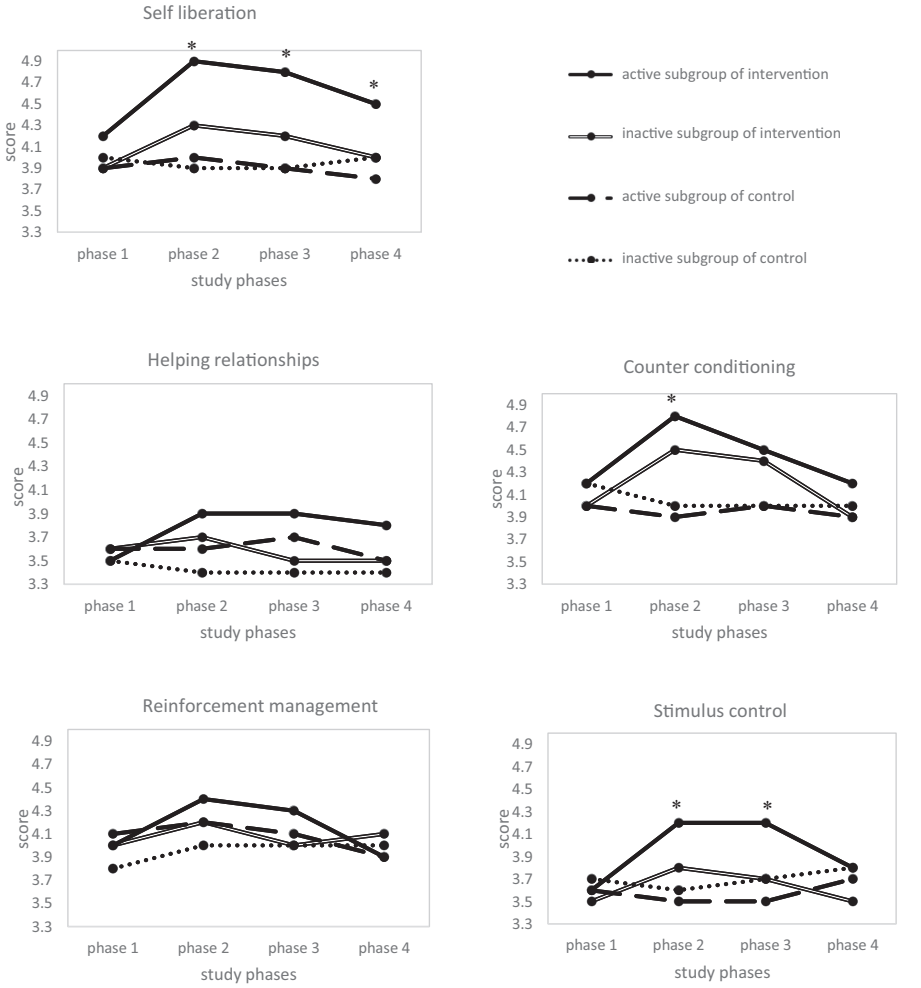


Figure 2.
Behavior processes of change score across study phases

Note(s): The star sign in each phase of the study indicates a significant difference between the subgroup in the intervention and it's respective subgroup in the control group in the same phase

control group ($p = 0.02$ and 0.05, respectively) but decreased again in the third and fourth phases of the study. Also, the decisional balance score showed an increasing trend from the first to the end of the study, and in the fourth phase, a significant difference was observed with the respective control ($p = 0.03$). Totally, behavioral and cognitive processes score increased immediately after intervention (the second phase); however, it declined over time.

Active subgroups: in the active subgroup of the intervention, the self-efficacy score revealed an increasing trend from the first to the end of the study, and in the fourth phase, there was a significant difference with the active subgroup of the control group ($p = 0.03$). In the active subgroup, the sum of behavioral processes score was significantly higher than its respective control in the second and third phases ($p = 0.007$ and 0.03, respectively). Although

its score decreased after six months, the intervention group still had a significantly higher score than the control group ($p = 0.05$) (see Table 4). In the second phase, self-liberation, counterconditioning and stimulus control scores significantly increased compared to the control group ($p = 0.003$, 0.01 and 0.02, respectively). Self-liberation score remained significant until the fourth phase ($p = 0.04$), but the scores of the other two processes were again reduced in the fourth phase (see Figure 2).

An intragroup comparison was also performed with Wilcoxon or paired-samples *T*-Test. Significant differences are specified in the tables. In the control group, intragroup differences were not significant.

Discussion

In this study, the educational intervention based on TTM, resulted in a sustainable, significant progression in participants' stage of change and an increase in the self-efficacy and decisional balance scores. The findings showed a 33% progress in the active stages at six months (the end of study), which confirms previous observations by Finckenor *et al.* (Finckenor and Byrd-Bredbenner, 2000) that indicated a 23% increase in the percentage of participants in the active stages after a 14-weeks intervention. Similarly, the rate of people's progress to active stages was 23% at 24 months in the study by Brick (Brick *et al.*, 2019), 47.5% at 24 months in the study by Johnson (Johnson *et al.*, 2008) and 24.2% at 24 months in the study by Green (Greene *et al.*, 2013).

Concerning the baseline self-efficacy score, it was more in active subgroups, similar to other dietary behavior studies, confidence and self-efficacy were lowest among precontemplators and increased at each stage group (Velicer *et al.*, 1990). Self-efficacy was shown to be a strong predictor of stage transition (Clark *et al.*, 2004). The intervention resulted in a significant increase in participants' self-efficacy scores in active and inactive subgroups, almost at the same level. Self-efficacy score improved in each phase compared to the previous stage and remained steady throughout the six months after the intervention. This could be due to strategies used such as practical training in low-fat cooking methods, eating together and talking with each other about it, setting short-term goals for future meetings, encouraging participants improvements and increasing motivation to follow the guides and instructions to achieve weight loss. Previous studies by Paulson (2011), Linde (Linde *et al.*, 2006) and Frenn (Frenn *et al.*, 2003) have also shown the effect of similar strategies in increasing self-efficacy. Self-efficacy is included in most of the theories (Menti *et al.*, 2019). A main reason behind self-efficacy's frequent inclusion in these theories is its effectiveness in facilitating behavior change (Bandura, 1986; Borhaninejad *et al.*, 2017). Previous studies have shown that self-efficacy is the most effective element for health behavioral changes (Menti *et al.*, 2019; Palmeira *et al.*, 2007). Also, one study found that self-efficacy plays an important role in preventing people from returning to their inactive stages (Yusufov *et al.*, 2016).

The increase in decisional balance score was higher in the inactive subgroup compared to the active subgroup. It was the highest in the fourth phase compared to the previous three phases. The reason for this difference may be attributed to more emphasis of the intervention on discussing the pros and cons of behavior change in the inactive subgroup due to their higher need (Glanz *et al.*, 2008). Increasing decisional balance score in both subgroups could be attributed to a decrease in score of cons and an increase in the pros score. In previous studies that examined the effect of TTM-based intervention on other dietary behaviors, the effect of intervention on decisional balance was different, so that in some studies, such as our study, the pros score increased and the cons score decreased (Bawadi, 2004); in some, both pros and cons scores decreased (Paulson, 2011); in some, the pros score increased, but no statistical differences were found in the mean score of the

cons (Gur *et al.*, 2019) and in some studies intervention had no significant effect on decisional balance (Jalambadani *et al.*, 2017). These differences in findings may be due to differences in awareness and perception of the severity of the behavioral risk under study in the target population. Also, obesity, overweight or normal weight in study participants and therefore the difference in their motivation for change, differences in duration of intervention and differences in the method of intervention implementation and the application of strategies for individuals at each stage of change, all of them can be the cause of these contradictions.

About processes of change, the baseline cognitive processes score for the inactive subgroup was more than active ones, while the behavioral processes score was the opposite. Prochaska and his colleagues showed the processes of change were strongly related to the stage of change (Prochaska *et al.*, 1991). He found that most of the cognitive processes' peak use is in the transition between contemplation to action stages (inactive stage), and the peak use of behavioral processes is in the action stage (active stage). The processes of dramatic relief and social liberation had the least change during the intervention, and less than all other processes were affected by the intervention. This may be because the mean score of the dramatic relief process was also high before the intervention (4.3 out of 5), and it may be challenging to achieve a higher score, and as for social liberation, strategies may have been insufficient to change this process. During the intervention, the processes score increased in both subgroups, but the increase in cognitive processes scores was higher in the inactive subgroup, and the raise in behavioral processes score was the highest in the active subgroup. In the third and fourth phases of assessments, the score of processes in both subgroups decreased compared to the previous phase. Greene *et al.* (1999) mentioned that change in the cognitive processes is mostly seen in the earlier stages, while a change in the behavioral processes happens in the later stages of change. All processes are less likely to be used in the pre-contemplation stage. The use of cognitive processes increases sharply through preparation, peaks in action, then decreases. In contrast, the use of behavioral processes tends to be low through contemplation, then rises sharply through action before decreasing. That is, the use of processes in the maintenance phase is reduced.

Interestingly, in the present study, in the fourth phase, the processes score dropped because persons who were in the preparation and action stages in the first three phases of the study must have entered the maintenance phase in the fourth phase of the study (six months after intervention). In other words, the highest number of individuals in the maintenance stage was in the fourth phase, and according to the pattern expressed by Green (Greene *et al.*, 1999), the use of processes in the maintenance stage is reduced. Therefore, given that in our study, the inactive subgroup included those in precontemplation, contemplation and preparation stages, and the active subgroup included those in action and maintenance stages, the baseline scores and the scores change pattern was expected and consistent with Greene's results (Greene *et al.*, 1999).

Our educational intervention was different for the active and inactive subgroups. The main focus of the training was on self-efficacy, decisional balance and cognitive processes for the inactive subgroup and behavioral processes for the active subgroup (Glanz *et al.*, 2008). Most previous studies, such as the present study, have shown that individuals are not ready to change their fat intake (Frenn *et al.*, 2005; Greene *et al.*, 2013; Steptoe *et al.*, 2001; Yusufov *et al.*, 2016). Therefore, the use of behavioral change strategies specific to each stage of change, and according to the degree of readiness of the person to change, facilitates behavior change more successfully than the traditional approach of using the same intervention techniques with everyone, regardless of the stage of change (Prochaska *et al.*, 1985).

This study is one of the few ones investigating the effects of all the TTM constructs, as most studies have utilized only one or two constructs. It has been able to provide appropriate guidelines and strategies to change people's behavior and dietary modification. One of the limitations of this study was the high attrition rate due to the high number of educational sessions and the study's long duration. Also, the questionnaires' length made people tired, and the control group did not cooperate reasonably.

The overall findings are that a TTM-based nutrition education program can increase the intention and motivation of women with overweight or obese to change their diet and progress to higher stages of changing fat consumption behavior. In the previous study, TTM-based interventions successfully improved diet and exercise adherence by enhancing motivation (Clark *et al.*, 2004; Jackson *et al.*, 2007).

Conclusion

The results indicated the intervention effectiveness and the necessity of planning educational interventions to change fat consumption behavior. This study provides further insight into effective and sustainable nutrition education strategies based on behavioral change stages rather than traditional approaches, which usually includes general training, regardless of the individual's readiness for change. These methods should be used to design group interventions to change individuals' health behavior in future works.

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Analyzing health-care service environment with Malaysian general practice clinics

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Abstract

Purpose – The purpose of this study is to explore the private general practice (GP) clinics' service environment, patients' satisfaction and their impact on word of mouth (WoM) for others for future treatment in GP clinics.

Design/methodology/approach – Data are collected from 367 respondents using a paper-based survey questionnaire. Partial least square (PLS) is used to evaluate the proposed model and hypotheses relationships.

Findings – The findings reveal that ambience and service delivery have a high significant influence on patients' emotional satisfaction ($\beta = 0.27, t = 4.31, p = 0.00$) and ($\beta = 0.26, t = 4.81, p = 0.00$), respectively, while interior décor has a positive and significant influence on satisfaction ($\beta = 0.13$, $t = 1.98$, $p = 0.04$). The results indicate that exterior design and cleanliness are not associated with satisfaction. Patients' emotional satisfaction is highly related to WoM ($\beta = 0.55$, $t = 13.44$, $p = 0.00$). The results also show that emotional satisfaction has a significant mediating effect on the relationship between clinic service environments (ambience, interior décor, service delivery) and WoM ($\beta = 0.15, t = 3.94, p = 0.00$), ($\beta = 0.073, t = 3.94, p = 0.04$), ($\beta = 0.$ 0.143, $t = 4.13$, $p = 0.00$), respectively.

Originality/value – The study will provide insights regarding Malaysian health consumers' perceptions toward GP clinics' service environment, whether they remain utilitarian or have evolved to entail hedonic appreciations. The contribution to the service environment could be adopted by future health-care studies, particularly those intended to examine GP clinics and other clinic-based institutions.

Keywords Health-care service environment, Word of mouth, Satisfaction, General practice clinic, Malaysia

Paper type Research paper

1. Introduction

The changes have affected general practice (GP) clinics' businesses in a dramatic manner. Intense competition, soaring operation costs, a convergence of health-care industry players, technology and consumer sophistication have exerted external pressures toward private GP clinics' business environment (Bhuller, 2018; Pettigrew *et al.*, 2019; Rahman, 2019). The primary, generalized and nonspecialized nature of service reduces GP clinics to be poorly differentiated, putting it at a competitive disadvantage (Kenny *et al.*, 2017). This study aims to investigate a frequently ignored aspect of GP service delivery, which is the clinics' service environment and how it affects consumer emotional experience and word of mouth (WoM) for others in GP clinics' health-care service delivery.

GP is defined as the branch of medicine that provides general, community-based, comprehensive primary care in a personalized manner to patients and their families,

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regardless of disease or the nature of the presenting complaint (AFPM, 2016; Rahman *et al.*, 2018a). It also refers to severe and life-threatening cases to specialist care at secondary (medical centers with general specialization) or tertiary (medical centers with sub-specialization e.g. specialist hospitals) and institutions. Upon discharge from these health-care institutions, the GP healthcare provides continuity and coordinative care (Rahman *et al.*, 2017), so that the patients' health is monitored in the community (Rahman *et al.*, 2018b). Generally, GP clinics provide all forms of medical disciplines; from medical to surgical, dermatology to radiology, neurology to psychiatry, pediatric to geriatric services and so on. However, due to limited skill set and instrumentation, GP clinics could only provide basic, elementary or primary care.

In Malaysia, a medical professional with a medical degree such as Bachelor of Medicine and Bachelor of Surgery (MBBS) and Medical Doctorate (MD) from institutions recognized by the Malaysian Medical Council (MMC) are permitted to perform the GP. The GPs are encouraged to undertake professional training to correspond with the practice of developed nations. The country's private GP clinics are privately owned. The private clinics' business environment is highly competitive. This is due to the high number of private GP clinics in the market. However, GP clinics' business environment is facing intense competition. The internal weakness of undifferentiated service offerings and external threats such as the convergence of health-care industry players, technology and consumers' sophistication is making the GP clinics' business prognosis unattractive (Fong and Kumar, 2017; Bhuller, 2018). The external threats such as the convergence of health-care industry players, technology and consumers' sophistication are exerting pressures on GP clinics' business survival (Bhuller, 2018).

The number of private GP clinics has exceeded 7,000 in Malaysia (Thomas, 2017; Su-Lyn, 2020). The Ministry of Health Malaysia (2020) reported that there are 10,198 health clinics (7,335 private and 2,863 public) in Malaysia. The growing number of private GP clinics imposes threats and competitive pressure toward GP clinics' business environment (Teo, 2017). The implementation of the Private Health-care Facilities and Services Act 1998 and regulations have changed the current landscape in private practice in private clinics (Chow, 2020). The implications of many of the changes are noble and aim to improve the quality of patient care and protect patients' rights. Lim *et al.* (2010) reported that around 343 hospitals are having pediatrics services. This report focuses on the inadequate and maldistribution of pediatrics facilities in Malaysia. There were 1,000 pediatricians in Malaysia in 2010. If the country expects to reach the USA norm of 1 pediatrician to 2,000 children by 2020, the children population is expected to reach 11.6 m and another 4,800 pediatricians will require to be trained. According to the Ministry of Health, the distribution of obstetrics and gynecology (O&G) was 35.2%, anesthesiology of 48% and pediatrics of 45.8% in 2010.

In Malaysia, private GP clinics are privately owned and provide medical services to the community at the district level with the least medical cost. The environment of these clinics is dependent on the population size of the community to cater for the number of patients. The private GP clinics are located within the community, either at urban areas, suburban residential areas or rural areas (Kenny *et al.*, 2017). The GP clinics would conduct their operation from commercial premises within the community. Currently, GP clinics are operating within shopping malls in Malaysia. The inclination is mainly due to ease of access and patients' convenience (Naidu, 2017). Facilities such as ample parking spaces, elevator services and eateries render malls to be a resourceful location for health centers as for other utilitarian service outlets such as banks and legal firms (Lloyd *et al.*, 2014). Furthermore, the tendency is explained by the improved communal economic prowess as mall health-care centers were reported to attract higher-income consumers (Allard *et al.*, 2009). In terms of service environment, the clinics' setups are generally utilitarian – to serve the functional purpose of a community-based clinic. The basic interior layout includes entrance, reception

area, registration and dispensary counters, waiting area, as well as consultation and treatment rooms. Within the provision of law, more GP clinics, especially the new ones, are seen to incorporate modern design and styling elements into their clinic' service environment.

The health-care service environment is scarcely studied with consumers' emotional satisfaction (Torkzad and Beheshtinia, 2019; Vardaman *et al.*, 2020) and responses toward WoM. Instead, it is investigated more frequently for safety, ergonomics, therapeutics and medical engineering purposes (Stone, 2004; Cappelleri, 2014). Of those which investigated the health-care service environment, the findings diverge from one form of health-care service to another due to the vast differences in the physical settings across various medical disciplines and specializations (Han *et al.*, 2018). The physical elements scrutinized by the studies vary and whether the findings could be inferred to private GP clinics, especially in the Malaysian context, are yet to be verified. Thus, this study examines the effect of GP clinics' services environment (e.g. ambience, cleanliness, interior décor, exterior design and service delivery) on satisfaction, which in turn inspires consumer positive responses of WoM for others to receive medical treatment from private GP clinics. The findings would also offer commercial and marketing propositions toward the struggling private GP clinics' businesses.

2. Underpinning theory

This study follows Bitner's (1992) physical environment model of "servicescape" to accentuate the patients' perceived services expectation in GP clinics. Bitner (1992) developed the physical environment model termed "servicescape" to accentuate the impact of the service environment on consumer experience, which in turn influences their behavior. As the service environment influences consumer experience and response, servicescape design and modification become important. In GP clinics setting, the service environment of Malaysian private GP clinics is predominantly utilitarian to cater mainly for functional purposes. Consumer experience consists of consumer emotional satisfaction, while consumer response consists of positive WoM. Following the servicescape (Bitner, 1992) or SERVQUAL model (Parasuraman *et al.*, 1988) and expectation–disconfirmation paradigm (Johnston, 1995; Oliver, 1980), this study proposes the conceptual model (Figure 1) that evaluates the service environment of healthcare. The study explains how patients and GP clinics' providers create and affect health-care services quality. The model indicates five factors incorporating ambience, cleanliness, service delivery, interior décor and exterior design to determine patients' satisfaction and their WoM to others for health-care treatment received. The construction of satisfaction and WoM is widely interpreted in service industry research in the context of expectation–disconfirmation paradigm. In line with these, a disconfirmation between prior expectation and service performance affects patients' satisfaction or dissatisfaction, which is identified based upon the patients' internal determinants and perceived performance. The evaluation of services is highly dependent on consumer

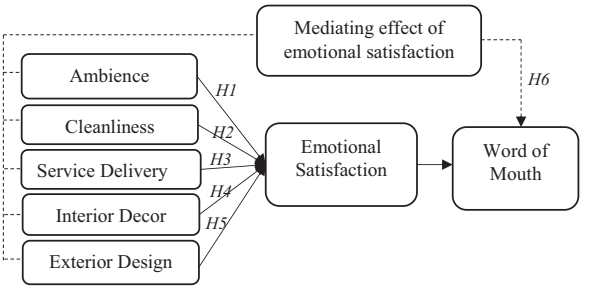

Figure 1.
Conceptual model

experience and emotion during the service encounter (Selim *et al.*, 2019). This is because, in the service sector, consumers do not attain tangible ownership of physical merchandise upon transaction. Instead, the benefits procured by consumers are essentially imperceptible or intangible. Therefore, the performance of service providers is highly reliant on consumer experience and emotion during the service encounter (Lee *et al.*, 2020; Blut *et al.*, 2014). Service quality is the essence of any service offering (Rahman, 2019). Services of high quality would be favored highly, while poor-quality services would be favored poorly by consumers. The important facet of service evaluation is the service environment or the physical surroundings in which the service offerings take place.

3. Literature review

3.1 Ambience

The ambient conditions refer to sensorial environmental stimuli such as temperature, lighting, scent and background sound. These stimuli, in certain service sectors such as restaurant and hotel industries, can be powerful impetuses for consumer experience and response (Hooper *et al.*, 2013). These aspects of the service environment affect consumers differently across different service sectors. Lin and Liang (2011) found both ambiance (air quality, lighting, music and scent) and design (layout, facilities and wall color) to be significant factors for positive consumer emotional satisfaction among fashion-wear retailers. Ambient conditions were found to have high predictive power for customer positive emotional response in a restaurant setting (Liu and Jang, 2009; Suh *et al.*, 2015; Roschk *et al.*, 2020). In another hedonic service sector, the hotel industry, ambient conditions such as lighting, scent and music play important roles in consumer responses (Leenders *et al.*, 2019). Accordingly, this study focuses on the relationship between ambience and satisfaction, particularly in the private GP healthcare context. Therefore, this study hypothesized that

H1. Ambiance is positively related to emotional satisfaction.

3.2 Exterior design

Exterior design covers the aesthetic aspects of the clinic's exterior such as the signage board, clinic name and glass panel design. It represents hedonic elements of GP clinics' service environment. Sign and symbols serve both functional and symbolic purposes. Direction signage panel serves a utilitarian purpose of navigation, while a brand name and logo communicate at the symbolic level (Hooper *et al.*, 2013). Rahman (2019) postulated that consumers are willing to receive health-care services with an attractive exterior design of the clinics or hospitals. Health-care businesses generally invest extensive resources in creating customer satisfaction in a satisfactory clinic service environment. There is a specific buyer effect of consumers by designing spaces, environments, emotional effects and increasing satisfaction of the consumer. The clinic's exterior design focused on design clues, social clues and environmental clues (Cahill *et al.*, 2019). The attraction of design mostly originates from its visual elements; the color, lighting and the overall layout are the most crucial matter (Ramli, 2019; Gong *et al.*, 2020), which influences customer satisfaction. Thus, we proposed the following hypothesis:

H2. Exterior design has a significant influence on emotional satisfaction.

3.3 Interior décor

Interior décor explores the aesthetic aspects of the clinic's interior design such as displays (paintings and posters), furniture, wall, consultation room and floor styling. Interior décor also represents hedonic elements of GP clinics' service environment. The paintings, wallpaper

design and interior décor of the service environment communicate symbolically to provide a sense of style (Hooper *et al.*, 2013; Gong *et al.*, 2020). Paintings, wallpaper design and interior décor of the service environment communicate symbolically to provide a sense of style (Han *et al.*, 2018). In terms of GP clinic service environment, decorations were found to influence patients' satisfaction in a private hospital (Sahoo and Ghosh, 2016). Kang (2018) discussed the importance of aesthetic experience and fashion and its impact on social life because fashion presents aesthetic quality and it shows the social relationship. Interior décor also represents the interior arrangement and placement of clinic functional elements such as reception counter, waiting room and as ease of consumer navigation. Given the presented analysis, we suggested the following hypothesis:

H3. Interior décor has a significant influence on emotional satisfaction.

3.4 Cleanliness

The cleanliness variable represents the hygiene aspect of the GP clinics' service environment, which includes the hygiene of the sidewalk in front of the clinic, reception area, waiting area, consultation room as well as staff members' attire. Physical dimension such as hygiene and cleanliness were found to influence patients' emotional satisfaction in outpatient and emergency department settings (Akmaz and Çadırcı, 2017). Mona *et al.* (2014) found that a clean and hygienic environment of the clinics has a highly significant influence on satisfaction. The clinic's cleanliness in wards and waiting areas reflect the satisfaction of patients in health-care services. The health-care providers highlight the cleanliness in a washroom and surrounding area (Khan and Khan, 2018) of the clinics for the patients' safety and satisfaction. It implies that clean medical equipment, pure food and cleanliness of the hospital can influence the satisfaction of the patient. The healthy and clean environment in the clinics relies on administration of the clinics, wards of the clinics/hospital, operation theaters, laboratories, canteen and food provided to the patients (Rahman, 2019; Rahman *et al.*, 2018a). Given this analysis, we proposed the hypothesis that

H4. Cleanliness positively influences consumer emotional satisfaction.

3.5 Service delivery

It is important to note that in healthcare, service delivery is perceived differently from other service conditions such as banking, restaurants and airlines because patients find it difficult to determine, measure and evaluate the technical nature of medical services offered to them (Sahoo and Ghosh, 2016). From the service environment's perspective, service delivery concerns about the social aspect of the physical environment. Sahoo and Ghosh (2016) found that private hospital service environments influence health consumers' satisfaction. Akmaz and Çadırcı (2017) demonstrated the impacts of outpatient clinics and emergency departments' health-care services toward patients' satisfaction. Patients' waiting time and doctor's and clinic personnel's ability to explain medical information and demonstrate a sense of friendliness, caring and kindness would be examined. Han *et al.* (2018) focus on the importance of adopting different dimensions to evaluate the service environment and propose a couple of research agendas for future research on health-care services. Based on this analysis, we suggested the hypothesis that

H5. Service delivery is positively related to emotional satisfaction.

3.6 Emotional satisfaction

Emotional satisfaction refers to an effective sense of pleasure and fulfillment that arises from cognitive appraisals of events, thoughts and experiences (Wong, 2004). WoM is defined as

verbal, person-to-person, casual communication between consumers about a brand, a product, an organization or a service (Higie *et al.*, 1987). Ng and Russell-Bennett (2015) reported that patients' satisfaction influences their behavioral intentions and positive WoM. Emotionally satisfied patients are more likely to recommend others for receiving treatment in clinics. The powerful influence of WoM can be destructive. This occurs when consumers are unsatisfied with the service received. Instead of sharing a positive experience, the consumers will convey negative experiences and criticisms of their service encounter. To prevent such occurrence, good service quality and consumer relations are of priority (Sweeney *et al.*, 2014). Dennis *et al.* (2010) showed emotional satisfaction at a desirable retail service environment. A desirable retail service environment leads to repeat purchases at luxury outlets. Similarly, emotional satisfaction can lead to WoM to others for medical treatment in clinics. Given this analysis, we proposed the following hypotheses:

H6. Emotional satisfaction has a significant influence on WoM toward GP clinics.

H7. Emotional satisfaction mediates the relationship between health-care services environment (a) ambience, (b) cleanliness, (c) exterior design, (d) interior décor and (e) serviced delivery on WoM.

Based on the theoretical foundation and review of the literature, Figure 1 proposed the conceptual model of this study.

4. Research methodology

4.1 Measurement

In this study, the private GP clinics' health-care environment consists of the five crucial dimensions such as ambience, cleanliness, service delivery, interior décor and exterior design. A total of 20 measurement items were improvised from a combination of Bitner's (1992) and Han *et al.*'s (2018) dimensions to suit Malaysian private GP clinics' services environment settings such as ambience, cleanliness, exterior design, interior décor and service delivery. In total, five measurement items for WoM were adopted from Eisingerich *et al.* (2015). This study used SPSS, version 21.0, as a statistical analysis tool to implement data analyses for preliminary data assessment, and SmartPLS, 3.0 version, was used to test the conceptual model. The partial least square (PLS) statistical tool is suitable for the model fit without any difficulty (Hair *et al.*, 2019). For the existing study, we have used a six-point Likert scale (i.e. 1 = strongly disagree and 5 = strongly agree) for evaluating the respondents' level of perceptions on GP clinics' service environment, emotional satisfaction and WoM.

4.2 Sampling method and data collection

Purposive sampling was used for collecting data from the GPs services centers/clinics. The research assistant purposively selected the potential respondents across age group, gender, ethnicity and their monthly income level. The first method was performed with a total of 340 individual patients (paper based) with random participants recruited at GP clinics in Subang Jaya and Petaling Jaya vicinity (from October to December 2019) because there are many GP clinics in these areas. Consented participants answered paper-based survey questionnaires in the face-to-face manner. The participants were politely approached and greeted. Respondents' anonymity and confidentiality were particularly emphasized. The participants were selected across different demographics and backgrounds. To avoid sampling bias, medical professionals including physicians, nurses and health-care administration workers were excluded.

A small gift (e.g. pen and chocolate) was provided during the face-to-face data collection. Consenting participants were given brief instructions to answer the survey questionnaire. The survey questions for this study were translated from the English version into Bahasa Malay language as there are three ethnic groups (Malay, Chinese and Indian) that participated in this study and both of them were citizens of Malaysia. Thus, two sets of questionnaires were distributed to respondents. Before the main data collection, a pretest was performed with five expert's opinions, who had experience in health-care services. Feedbacks from pretest participants' comprehension and impression regarding clarity and complexity, as well as the order of the questionnaire were taken into consideration. The pilot tests (30 respondents' complete responses) were performed on a paper-based questionnaire. The participants were encouraged to scrutinize each question and provide feedbacks while responding to the questionnaire. They were also encouraged to scribble notes on the questionnaire sheets. The researcher would observe pretest and pilot test participants' reactions and took notes on their comments, opinions and feedback.

The second method of data collection was performed through an online survey using Google Form (web based). The online survey was distributed to 160 individuals (between November and December 2019) in the Klang Valley area from researcher's network of work associates, family and friends through electronic messaging platforms such as WhatsApp and Telegram. Lastly, out of 500 questionnaires, we have received 367 responses, and six responses were not considered for data analysis because respondents were non-Malaysian and one response was dropped because it was incomplete. Thus, 360 valid responses were considered for data analysis with a response rate of 72%. To validate the sample size of this study, the G*Power 3.1.9.2 tool was used for measuring 360 useable samples. The result shows that a significant value of 0.05 yielded a strength of 0.99, which was larger than 0.80, indicating the satisfactory level of sample power in this study (Chin *et al.*, 2003).

5. Analysis and findings

5.1 Demographic analysis

Based on the respondents' demographic profile (Table 1), female respondents outnumbered the male respondents, with female respondents making up 63.9% of the total sample. In terms of ethnicity, the Malays form the vast majority, comprising 79.2% of the total sample. The Chinese make up 15.6% and the Indians make up 4.4% of total respondents. There are three respondents from other ethnic groups, which include a Punjabi, an Iban and a Melanau. In terms of the age groups, the majority of the respondents (90.6%) are between the age of 21–50 years, where 23.1% are from the 21–30 years age group, 38.9% are from the 31–40 years age group and 28.3% are from the 31–50 years age group. Less than 10% of the respondents are less than 20 years and above 50 years. For the marital status, 35.8% are single, while 57.6% are married. Of the total sample number, 15 are divorced and four are widowed. The majority (46.7%) of the respondents carry bachelor's degrees, while 20.3 and 1.3% hold master's and doctorate degrees, respectively. Approximately 10.6% of the respondents have high school and 20.8% have professional certifications as their highest qualification. The majority of the respondents work in the private sector (53.6%), followed by government service (17.2%) and self-employed (14.2%). Around 4.2% of the respondents are unemployed, while 10.8% are full-time students. In terms of monthly income, 30.6% of the respondents are from the RM 2,5001 to 5,000 bracket, followed by 20.8% from the RM 5,001 to 10,000 bracket, 18.6% from the RM 1 to 2,500 bracket and 16.1% earn RM 10,000 and above. Of the respondents, 13.9% have no monthly income.

5.2 Measurement model assessment

To assess the measurement model, we have used four steps PLS analysis procedures. The findings (refer to Appendix) revealed that factor loadings ranged from 0.77 to 0.92, which

Variable	Category	Frequency	Percent (%)
Gender	Male	130	36.1
	Female	230	63.9
Ethnicity	Malay	285	79.2
	Chinese	56	15.6
	Indian	16	4.4
	Others	3	0.8
Age	18–20 years old	9	2.5
	21–30 years old	83	23.1
	31–40 years old	140	38.9
	41–50 years old	103	28.6
	51–60 years old	22	6.1
	61 years old and above	3	0.8
Marital status	Single	129	35.8
	Married	211	58.6
	Widowed	4	1.1
	Divorced	16	4.4
Level of education	High school	38	10.6
	Professional certification	75	20.8
	Bachelor's degree	168	46.7
	Masters' degree	73	20.3
	Doctorate	6	1.7
Occupation	Unemployed	15	4.2
	Student	39	10.8
	Self-employed	51	14.2
	Government employee	62	17.2
	Private employee	193	53.6
Monthly income	None	50	13.9
	RM 1 to 2,500	67	18.6
	RM 2,501 to 5,000	110	30.6
	RM 5,001 to 10,000	75	20.8
	Above RM 10,000	58	16.1

Table 1.
Demographic profile of the respondents

indicates that all the constructs explain more than 50% of the indicator's variance, thus providing acceptable reliability (Hair *et al.*, 2019). The variance inflation factor (VIF) values are below 3 and even lower (lowest 1.04, highest 2.627), showing no probable multicollinearity issue within the predictor constructs (Becker *et al.*, 2015). Mean measures the central tendency in the form of average. Standard deviation measures the span of observed values. The larger the standard deviation, the more spread out the observations (Sheridan and Coakes, 2011). To numerically assess normality, skewness and kurtosis are the chosen tests of this study. Skewness measures the asymmetry of variables' distribution about their means. The sign of the skewness represents the skewness' direction. Negative skewness value indicates that more than 50% scores are toward the right of the histogram and positive sign indicates that more than 50% scores are toward the left of the histogram. A value that is in between −0.5 and 0.5 is approximately symmetrical and less than −0.5 and more than 0.5 is asymmetrical. The skewness in between −1.5 and 1.5 is considered within the range of normality (Sheridan and Coakes, 2011). Kurtosis measures the height and sharpness of the central peak relative to that of a standard bell curve. A kurtosis value in between −2.0 and 2.0 is considered within the range of normality (Sheridan and Coakes, 2011). In this study, the data uses for the items of the measured variables scored within the acceptable skewness and kurtosis range, thus confirming normality.

Second, we assessed the internal consistency reliability using composite reliability (CR). Table 2 shows the CR values are ranging from 0.905 to 0.935, and values between the 0.70 and 0.90 range are considered satisfactory for good reliability (Hair *et al.*, 2019). Cronbach's alpha also measures internal consistency reliability, although this is a less precise measure of reliability (Hair *et al.*, 2019). Here, Cronbach's alpha values are ranging from 0.843 to 0.932, again indicating a higher-bound estimate of reliability (Gefen *et al.*, 2000). The cut-off values of rho_A, which turns out to be greater than 0.70 ranging from 0.847 to 0.935, which is enough for CR (Dijkstra and Henseler, 2015). Third, we have assessed and addressed the convergent validity (CV) of every construct, where average variance extracted (AVE) is used as the metric to evaluate CV (Hair *et al.*, 2019). Fornell and Larcker (1981) recommended AVE to be above 0.50. The AVE values ranged from 0.727 to 0.827, signifying that the constructs can explain more than 50% of the variance of its items (Hair *et al.*, 2019).

For the robustness of this study, we assessed the discriminant validity using both the Fornell–Larcker criterion and the heterotrait–monotrait (HTMT) ratio of the correlations. Table 3 summarizes that the correlations between the latent variables and the square root of AVE values are on the top of each column (the diagonal values). The square root of each AVE is greater than the corresponding correlation among the latent variable scores for its corresponding row and column values, which indicates sufficient levels of discriminant validity as per the Fornell–Larcker criterion (Fornell and Larcker, 1981; Hair *et al.*, 2019). Moreover, HTMT ratio is also employed since Henseler *et al.* (2015) proposed HTMT to be a strong replacement for Fornell–Larcker. Here, all the HTMT values are below 0.90, ranging from 0.386 to 0.843, which strongly suggests that discriminant validity is present and constructs are conceptually more distinct (Hair *et al.*, 2019; Henseler *et al.*, 2015). The graphical results of the measurement model are shown in Figure 2.

5.3 Structural model assessment

Since the reflective measurement model has met all the major criteria, as the next step, we have assessed the structural model accordingly employing the statistical significance, blindfolding-based cross-validated redundancy measure (Q^2) and coefficient of determination (R^2) (Hair *et al.*, 2016). The measurement of variance is assessed to explain endogenous constructs, evaluate the model's explanatory power (Hair *et al.*, 2019). The R^2 values of emotional satisfaction (0.294) show small, whereas WoM (0.622) indicates a moderate level of explanatory power to the structural model (Henseler *et al.*, 2009). Further, we calculated the Q^2 value to assess the predictive accuracy of the structural model via the blindfolding procedure (Shmueli and Koppius, 2011). The result shows that emotional satisfaction (0.225) and WoM (0.420) have small to moderate level of predictive relevance (Hair *et al.*, 2019).

The results from the evaluation of the structural model were reported in Figure 3 and Table 4. The results revealed that the standardized path coefficients of service delivery and ambience have a significant impact on emotional satisfaction (0.259; $p < 0.01$) and

Table 2.
Construct reliability and validity

Constructs	Cronbach's alpha	rho_A	CR	AVE
Ambiance (AM)	0.911	0.918	0.933	0.737
Cleanliness (CL)	0.906	0.908	0.935	0.782
Exterior design (ED)	0.843	0.852	0.905	0.760
Interior décor (ID)	0.913	0.920	0.938	0.792
Service delivery (SD)	0.877	0.878	0.916	0.731
Emotional satisfaction (ES)	0.930	0.932	0.920	0.827
Word of mouth (WM)	0.875	0.888	0.914	0.727

	AM	CL	ED	ES	ID	SD	WM
AM	0.859						
CL	0.702	0.884					
ED	0.563	0.526	0.872				
ID	0.486	0.372	0.348	0.909			
SD	0.633	0.552	0.689	0.415	0.890		
ES	0.586	0.584	0.364	0.456	0.453	0.855	
WM	0.663	0.610	0.511	0.553	0.579	0.669	0.853
Heterotrait–monotrait ratio (HTMT)							
AM							
CL	0.774						
ED	0.635	0.600					
ID	0.525	0.404	0.386				
SD	0.691	0.606	0.783	0.444			
ES	0.656	0.658	0.421	0.505	0.506		
WM	0.735	0.678	0.591	0.607	0.652	0.751	

Note(s): AM = ambiance, CL = cleanliness, ED = exterior design, ID = interior décor, SD = service delivery, ES = emotional satisfaction, WM = word of mouth

Table 3.
Discriminant validity

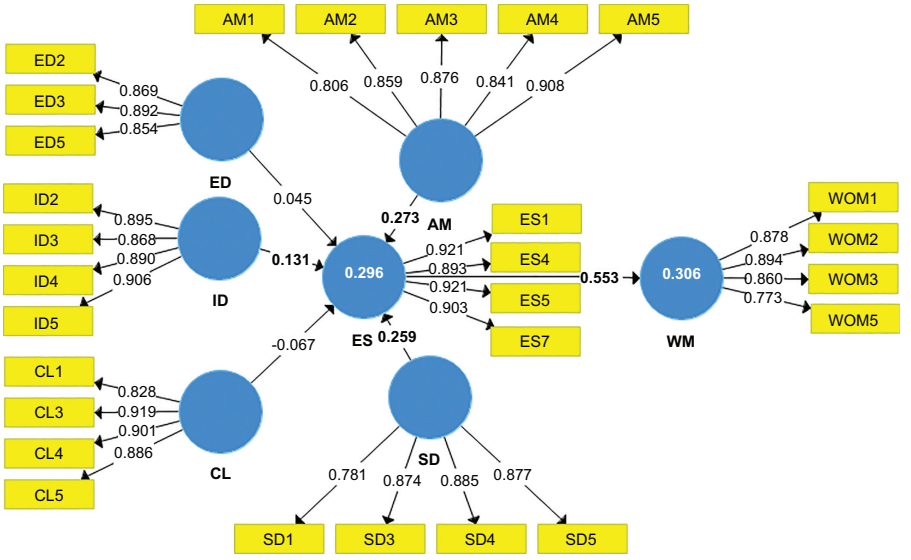

Figure 2.
Measurement model

(0.273; $p < 0.01$), respectively. Thus, the service delivery and ambience are found to exhibit a significant and positive impact on emotional satisfaction, lending support to H1 and H5. The path coefficient between exterior design and emotional satisfaction is not significant (0.045; $p > 0.05$), the same goes for cleanliness (−0.067; $p > 0.05$). Hence, we found H2 and H4 are not supported. The standard path internal decor is positively related to emotional satisfaction (0.131; $p < 0.05$). Thus, the internal decor is found to have a significant impact on emotional satisfaction, leading support to H3. The path coefficient of emotional satisfaction has a significant and positive impact on WoM (0.533; $p < 0.01$). Thus, emotional satisfaction is found to exhibit a positive impact on the endogenous constructs, lending support to H6.

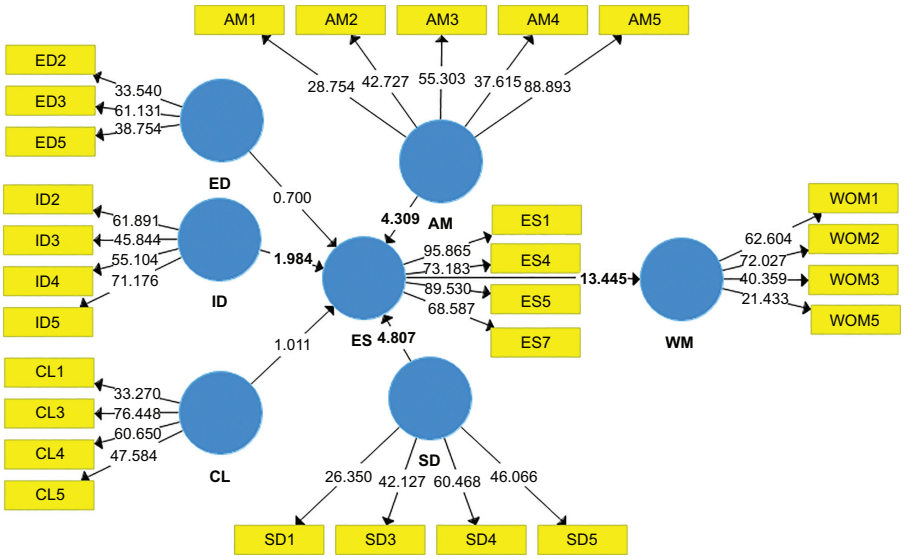

Figure 3.
Structural model

Hypothesis	Relationship	Beta	SD	*t*-value	F^2	Q^2	R^2	*p*-value	Comments
H1	AM - > ES	0.273	0.063	4.309**	0.142			0.000	Accept
H2	ED - > ES	0.045	0.064	0.700	0.052			0.484	Reject
H3	ID - > ES	0.131	0.066	1.984*	0.148			0.048	Accept
H4	CL - > ES	−0.067	0.066	1.011	0.043			0.312	Reject
H5	SD - > ES	0.259	0.054	4.807**	0.056	0.238	0.296	0.000	Accept
H6	ES - > WM	0.553	0.041	13.445**	0.441	0.219	0.306	0.000	Accept
Mediating effect									
H7a	AM - > ES - > WM	0.151	0.038	3.942**				0.000	Accept
H7b	ED - > ES - > WM	0.025	0.036	0.690				0.490	Reject
H7c	ID - > ES - > WM	0.073	0.037	1.972*				0.041	Accept
H7d	CL - > ES - > WM	−0.037	0.037	1.012				0.312	Reject
H7e	SD - > ES - > WM	0.143	0.035	4.135**				0.000	Accept

Table 4.
Hypothesis test

Note(s): *t*-value ≥ 2.326 considers significant level at $^{**}p < 0.01$, and *t*-value ≥ 1.645 considers significant level at $^{*}p < 0.05$

The findings reveal that emotional satisfaction mediates the significant relationship between ambience, interior decor and service delivery on WoM. However, emotional satisfaction does not mediate the relationship between exterior design and cleanliness on WoM. Therefore, this indicates that H7a, H7c and H7e are supported and H7b and H7d are not supported.

6. Discussion

This study demonstrates that ambience elements of GP clinics' service environment lead to consumer emotional satisfaction. In private GP clinics' setting, Ayas *et al.* (2008) examined consumers' response toward GP clinics' waiting area and physical surroundings of clinics and ambient conditions (lighting, background sound level) in the sense of calmness among

the patients. Ng and Russell-Bennett (2015) examined public and private GP clinics service environment that influences patients' satisfaction; they also found only ambient conditions and not design nor symbolic conditions to be a good predictor. Ambience elements such as temperature, lighting, scent and background sound serve utilitarian purposes in the health-care service setting. These sensorial elements have consequential bearings toward patients as the patients are experiencing some form of discomfort that affects their senses. Therefore, a peaceful and comfortable ambience would cause a positive emotional experience (Lee, 2011). The study found that there are no significant relationships between exterior decor and emotional satisfaction. This is perhaps customers do not prefer much the exterior décor of health-care clinics; they only want quality health-care delivery, ambience, cleanliness and interior décor of private GP clinics. It implies that customer satisfaction and WoM do not mean giving customers what we think is favored by customers; it means we should provide them what they really want, when and how they acquire it. For example, the descriptive analysis of mean score evidence that clinic signage board, clinic name, entrance, glass panel all are required with well designs, but they are not the key factors for attracting patients and WoM for others to receive future medical treatment in the GP clinics. Moreover, Azila-Gbettor *et al.* (2013) stated that the external design factor is not important to positively influence patients' perception of service quality in public hospitals. The interior décor is important because it influences patient satisfaction in clinics.

The findings of the existing study reveal that cleanliness is not associated with satisfaction. This is perhaps patients in private GP clinics prefer service quality more than the cleanliness of the surrounding area of clinics. Besides, most of private clinics and hospitals in Malaysia are neat and clean; thus, patients may think that cleanliness is not vital for them in receiving the health-care treatment. Agensi Pekerjaan Maaisha (2020) reported that Agensi Pekerjaan Maaisha Cleaning Service provides one of the best cleaning services to hospitals and clinics in Malaysia. The country's environmental services (housekeeping, bio-cleaning of patient rooms, operation rooms and hotel rooms) are hygienic, safe and comfortable for health-care and hotel environments, ultimately leading to wider health and hospitality outcomes. However, researchers believe that cleanliness is an important component in attracting patients in a long-term business setting and emerging economy in health-care organizations. The evaluation of health-care services is highly reliant on doctor–patient interactions (Sahoo and Ghosh, 2016). Therefore, it is not surprising that GP clinics' service delivery positively influences consumer emotional satisfaction. The findings emphasize the importance of pleasant social interaction such as the ability to convey a sense of care and friendliness by the internal doctor and clinic personnel toward patients (Akmaz and Çadırcı, 2017). The findings indicate the associations between consumer emotional satisfaction and WoM. These findings are comparable with other service sectors' findings. For example, emotional satisfaction is found to have consumer positive behavioral response toward WoM in the restaurant industry (Jang and Namkung, 2009), hotel industry (Ladhari, 2009), as well as retail industry (Lin and Liang, 2011).

The findings also indicate that satisfaction positively mediates the relationship between health-care service environment and WoM. In the health-care service sector, Ng and Russell-Bennett (2015) reported that patients' satisfaction influences their behavioral intentions toward positive WoM. Ladhari *et al.* (2017) described that emotionally satisfied patients are more likely to recommend receiving health-care treatment. Azila-Gbettor *et al.* (2013) found that patients' satisfaction leads to behavioral responses such as willingness to recommend, pay up and revisit intention for health-care services. Therefore, this study confirms that consumer emotional satisfaction to Malaysian GP clinics' service environment has significant relationships with consumer response toward positive WoM.

7. Conclusion and implications

The findings of this study have a crucial implication for the health-care managers in the GP clinics' service environment. The findings of this study are important for patients' emotional satisfaction and WoM for others to the GP clinics' ambience, service delivery and interior decor. These factors can be used by health-care managers who intend to supervise GP clinics' services. This study confirmed that ambience and service delivery are the most influential factors for patients' satisfaction and WoM for others in setting health-care service evaluation of GP clinics' service environment. This study confirms that patients' emotional satisfaction significantly influences positive WoM for others in receiving health-care services in GP clinics. Furthermore, this study includes the elements of WoM as a part of social media which may assist to attract patients to receive health-care services from Malaysian GP clinics. Health practice activities and quality improvement initiatives of GP clinics could contribute to the society as health research has high value in society. The GP clinics' heath research could provide important information about risk factors, disease trends, patterns of care, cost of medical care and outcome of treatment. The different approaches to health-care research provide complementary insights. Clinical experience can provide a crucial piece of information about the efficacy and effects of health-care interventions. Clinical trial is crucial for comparing and developing the use of health-care services, drugs, vaccines and diagnostics.

The service delivery is a social factor of service encounter that is highly reliant on the interaction between service providers and the consumers. Therefore, proper personnel training in exchanging pleasantries, articulating kindness and empathy are of importance. From the physician's side, other than compassionate personalities, he or she must display medical competence and the ability to convey information effectively. As a whole, the GP clinic service must also be responsive, for example, ensuring patients' comfort at all times, short waiting time and prioritizing cases according to the seriousness of presenting complaints. The private GP clinics are facing issues of intense competition and convergence of medical practices, technology and consumer sophistication. To counter these challenges, the manager of GP clinics and health-care service providers must provide innovate novel services that differentiate themselves against their rivals.

To develop a new general practice model, GP clinics could focus on shifting from reactive to proactive care, develop skill mix, utilize technology, collaborate with nonmedical organizations and focus on patients' segmentation. This study found that emotionally satisfied patients are more likely to recommend others for medical treatment in health-care organizations. The private GP clinics should take advantage of this communication channel. The WoM is arguably more powerful than other means of marketing communication because consumers voluntarily share detail information as well as valuable experience of service encounters. The social element of service delivery such as friendliness and kindness must be emphasized. GP clinics must provide patients with sharable stories. These could be achieved by delivering interesting and relevant stories, as well as words of wisdom, which are easily remembered and repeated. The finding would help GP clinics to refashion their service environment to cater to or target the specific market segment.

The health-care managers in the GP clinics should provide a high level of coordination and collaboration for the patient care, and if there is any shortage of medical staff, health-care professionals may work in interdisciplinary teams, learning how to allocate responsibility efficiently and provide the skill mix in different situations. Health-care GP clinics must also have a grasp of design and quality improvement principles so they can standardize processes for better safety and quality for patients' satisfaction and WoM for other in receiving health-care services in GP clinics. Health education should emphasis upon drugs, alcohol, mental health and tobacco. Health education can lead to patient safety, personal cleanliness, social health, rest and sleep, nutrition and recreational habits. A skilled and educated health-care

manager and health-care service providers can produce a better environment and quality care to patients.

When the GP clinics' environment is clean, the perception of the cleanliness of patients is more positive. The patients will feel more satisfied with health-care services and GP clinics environments. The cleanliness can prevent GP clinics infections. The higher objective cleanliness always influences significantly with higher satisfaction of patients in GP clinic health-care services. The health-care providers or interior designers in GP clinics need to work with the facility team, including environmental services collaboratively to ensure the arrangement of the medical-related products. The more environmentally sensitive practice in design and facility management can increase patients' satisfaction and in turn, lead to WoM to others for receiving health-care services in GP clinics. A good GP clinic can encourage its staff to be honest about safety and supports them to report concerns and incidents. Medical staff should take particular care to ensure that children, young people and adults are kept safe from any harm or diseases. Medical staff can work together and with other teams and services effectively to meet the patients' safety and care. Patients should be treated with kindness, dignity and respect by the GP clinic medical staff members. The physicians should explain in detail about patients' medical condition in a way that patients can understand and be satisfied with the GP clinics' services. The findings of this study are consistent with those of previous health-care studies of various health-care settings, signifying the utilitarian nature of health-care service evaluation. In the health-care service settings, patients' emotional satisfaction can lead to positive response toward WoM. The findings confirm the utilitarian nature of GP clinics' health-care services and the importance of consumer emotional satisfaction for positive responses. Ambience and service delivery aspects of the service environment have to be optimized by GP clinics health-care services. As service delivery influences consumer emotional satisfaction, innovative GP services could contribute to competitive advantage to the health-care industry.

8. Limitations and future study

There are several limitations identified throughout the research. Firstly, the data collected via a survey questionnaire are based on respondents' memory of unspecified duration. Respondents who visited GP clinics with an extended time gap may not have a good recollection of the GP clinics' service environment, which might affect their emotional experience and behavioral response. This study uses the method for patients' perceptions; future investigation should use a method for doctors and nurses for the implementation in educational practice of medical services quality in the form of short-term training sessions for assessing the psychological incidence and emotional burnout among GP physicians. A specified time frame of the last visit, for example, within two weeks of GP clinics visit, would garner more accurate responses. The future GP clinics' healthcare could acquire data from a specified demographic such as social status, level of education and personal traits. Ambience has been repeatedly proven by health-care studies to influence consumer emotional satisfaction from a utilitarian perspective. Therefore, it is recommended that future studies investigate hedonic ambience elements such as music and fragrance toward patients' experience, such as the sense of comfort and calmness. The results would provide GP clinics with a means to differentiate their service environment. Service delivery has been found repeatedly by health-care studies to influence consumer emotional satisfaction and response. Future studies are recommended to investigate the health-care service quality factor more comprehensively. The SERVQUAL model measures the service quality aspects (reliability, responsiveness, assurance, empathy and tangibility) in greater detail, which is recommended for future research. Also, the SERVQUAL model can provide quality medical care services and customers satisfaction. Future studies should also examine the service environment and

quality of alternate primary care providers such as the 24-h private hospital's primary care services at the casualty departments. Moreover, the health-care system is very complicated; thus, future studies might be focused on acute to chronic care, adult to child, general and critical care for diseases. The changing nature of primary care service delivery necessitates future studies to investigate the benefits of alternate primary care options.

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Appendix

Constructs and items of the construct	Mean	SD	Skew	Kurt	FL	VIF
Ambience						
The temperature was acceptable (AM1)	3.78	0.634	−0.447	0.982	0.81	2.30
The lighting was relaxing (AM2)	3.68	0.739	−0.436	0.514	0.86	1.84
The clinic scent/smell was pleasant (AM3)	3.56	0.814	−0.124	−0.157	0.88	1.81
The surrounding sound was peaceful (AM4)	3.55	0.807	−0.257	0.071	0.84	1.63
In general, the clinic ambience was comforting (AM5)	3.73	0.771	−0.248	−0.050	0.91	1.49
Exterior design						
The clinic signage board was eye-catching (ED2)	3.36	0.907	0.173	−0.247	0.87	2.24
The clinic name was appealing (ED3)	3.36	0.842	0.029	0.147	0.89	2.20
The clinic exterior (e.g. entrance, glass panel) was well designed (ED5)	3.50	0.873	0.268	−0.089	0.85	1.76
Interior decor						
The flooring was attractive (ID2)	3.19	0.827	0.201	0.142	0.89	1.19
The furniture was stylish (ID3)	3.02	0.944	0.111	0.174	0.87	1.78
The displays (e.g. paintings, pictures, posters) were aesthetic (ID4)	3.30	0.924	0.021	0.300	0.89	1.90
In general, the clinic decoration was attractive (ID5)	3.36	0.889	−0.019	0.144	0.90	1.21
Cleanliness						
The sidewalk in front of the clinic was clean (CL1)	3.74	0.793	0.461	0.108	0.83	2.09
The waiting area was clean (CL3)	3.95	0.698	0.487	0.791	0.92	1.52
The consultation room was clean (CL4)	4.06	0.640	0.252	0.135	0.90	1.43
The staff members' attire was clean (CL5)	4.00	0.669	0.230	−0.065	0.88	1.06
Service delivery						
The registration personnel was friendly (SD1)	3.69	0.811	0.245	−0.380	0.78	1.85
The doctor's explanation was clear (SD3)	3.97	0.786	0.474	−0.110	0.87	1.04
The doctor was caring toward me (SD4)	3.99	0.770	0.357	−0.357	0.88	1.28
The assisting nurse was kind to me (SD5)	3.78	0.773	0.341	−0.139	0.87	1.64
Emotional satisfaction						
Displeased–pleased (ES1)	3.73	0.887	−0.107	−0.811	0.92	1.81
Frustrating–enjoyable (ES4)	3.53	0.856	0.174	−0.400	0.89	2.04
Unsatisfied–satisfied (ES5)	3.82	0.917	−0.425	−0.414	0.92	1.45
Unwanted–welcomed (ES7)	3.78	0.914	−0.347	−0.483	0.90	1.84
Word of mouth						
I will say positive things about the clinic to others (WM1)	3.84	0.691	−0.201	−0.069	0.88	1.06
I will encourage friends/ relatives to go to the clinic (WM2)	3.76	0.763	−0.256	−0.213	0.89	1.20
I will give a positive review of the clinic on social media (WM3)	3.55	0.835	−0.100	−0.120	0.86	2.62
I will recommend the clinic to others on social media (WM5)	3.25	0.840	0.016	−0.096	0.77	2.04

Table A1. Reliability and validity test

Note(s): SD = standard deviation, Kurt = kurtosis, Skew = skewness, FL = factor loading, VIF = collinearity statistics

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COVID-19 backlash: psycho-social impacts of outbreak in Pakistan

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Abstract

Purpose – This paper aimed to examine the psycho-social aspects of coronavirus disease 2019 (COVID-19) in Pakistan. The study was conducted in Pakistan by using an online survey technique. The rationale to opt for this method was mainly based on the country's lock-down situations, social distancing and for the care of respondents.

Design/methodology/approach – A total of 1,536 individuals participated from different parts of the country. An attitudinal scale was administered consisting of statements to measure (dis)agreement of the individuals facing the current situations of COVID-19. The ethical considerations and confidentiality of the respondents were opted by describing the purpose of research on the first page of the questionnaire.

Findings – The study findings showed that the cost of personal protective equipment (PPE), social isolation and loss of intimacy have favourable positive effects on the psychological problems of individuals through the mediation of fake news and misinformation during COVID-19. Furthermore, the study findings were interpreted as per the effects of current situations of epidemic, i.e. COVID-19 on the psycho-social life of individuals.

Research limitations/implications – This paper is purely limited to the quantitative approach including variables, i.e. COVID-19, risk of infection, social distancing, cost of PPE, social isolation, fake news and psychological problems.

Practical implications – The present research will enhance the awareness and knowledge regarding psychological problems faced by the individuals during COVID-19. It will be a significant addition to the existing body of knowledge in the field of health and well-being. It will also provide guidelines to students, research scholars, policymakers and academicians to develop policies in future to improve the health of people during epidemics such as COVID-19 and similar nature of outbreak in the future.

Originality/value – This paper focused on an important gap in the research on COVID-19 in the country in the context of COVID-19, risk of infection, social distancing, cost of PPE, social isolation, fake news and psychological problems.

Keywords COVID-19, Risk of infection, Social distancing, Cost of personal protective equipment, Social isolation, Fake news, Psychological problems

Paper type Research paper

Introduction

Human society is passing through a critical stage of the 21st century where Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) challenged the existence of humans (Sood, 2020). The coronavirus disease 2019 (COVID-19) unfurled rapidly from Wuhan, China in December 2019 (Brennen *et al.*, 2020). At the onset of the outbreak, the World Health Organization (WHO) declared it public health emergency. The COVID-19 encroached new territories and expedited globally. Moreover, the COVID-19 continuously surged throughout the continents impacted the countries from Asia, Europe, America and Australia (Özdin and Bayrak Özdin, 2020; Swerdlow *et al.*, 2020). Notably, the diverse population of the world was restricted to homes (Brennen *et al.*, 2020; Dong *et al.*, 2020). During the pandemic, nations enforced lockdowns, and people were confined to stay at homes in most of the outbreak-

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stricken countries (Freedman, 2020; Lipsitch *et al.*, 2020; Mansfield, 2020; Mucci *et al.*, 2020; Shoaib and Abdullah, 2020). It was mainly aimed to prevent the transmission of the disease among the masses because neither medicine nor any vaccine is available to cure the patients (Banerjee and Rai, 2020; Ghosh *et al.*, 2020; Mukhtar, 2020; Swerdlow *et al.*, 2020; WHO, 2020a, b and c). However, the people were advised to follow the infection prevention and control (IPC) guidelines and make use of less cost-efficient personal protective equipment (PPE) to prevent the pandemic (Freedman, 2020; Shoaib and Abdullah, 2020). Moreover, IPC guidelines mainly emphasized on social distancing and social isolation that resulted into loss of intimacy (Ćosić *et al.*, 2020; Sood, 2020; Van Lancker and Parolin, 2020). Consequently, it has impacted the lives of people to minimal interaction even with the family members and coworkers and maintain the social distance to keep the people safe from the hazards of outbreak. To our knowledge, there is not even single research conducted so far in Pakistan on the psychosocial aspects of COVID-19 in quantitative nature. Hence, this study is focused to examine psycho-social aspects of COVID-19 in Pakistan.

Study context

Worldwide, all people are familiar with the outbreak of COVID-19 detected first time in December 2019 in Wuhan city of China (Li *et al.*, 2020). The novel virus originated in the wet market of Wuhan, China that refers to a marketplace with vendors selling live birds and animals (i.e. dogs, fish, bats, cats, etc.). Initially, the common denominator identified among affected individuals had some level of exposure to the seafood market of Wuhan city (Previtali *et al.*, 2020; Shoaib and Abdullah, 2020; Swerdlow *et al.*, 2020). Scholars believed that the new virus mutated from a coronavirus family common in animals and later infected humans at that place (Ioannides and Gyimóthy, 2020; Li *et al.*, 2020; Lipsitch *et al.*, 2020). The virus is transmitted through coughs, sneezes, use of any utensil or touch and work in place which is previously affected. Thus, scientists and doctors in China tried (in Wuhan) best level to control; however, it spread to other parts of the world and affected most of the countries. As a result, a large number of people have been affected by the epidemic, i.e. COVID-19. Currently, there are 8,385,440 cases and 450,686 reported deaths by World Health Organization (WHO) on 19 June 2020 (WHO, 2020a, b and c).

The novel virus has also been detected in Pakistan and spreading rapidly. As for as the spread is concerned, the main reason in Pakistan has been reported as it was transmitted from travellers coming from Iran and some other parts of the world. At the initial stage, people in Pakistan did not observe the precautionary measures as advised by the government and WHO. Besides, there was a flow of misinformation and fake news substantiating the inexistence of such virus (Imran *et al.*, 2020; Lipsitch *et al.*, 2020; Mansfield, 2020; Shoaib and Abdullah, 2020). After a couple of days, the situation in Pakistan became dangerous. Currently, there are 336,260 confirmed cases and 6,849 death reported in Pakistan till today, i.e. 4 November 2020 (WHO, 2020a, b and c). Nowadays, people maintain social distancing, isolate in case of any COVID-19 related symptoms and follow the IPCs. Moreover, PPE is used as a safety measure to combat the impact of virus. Consequently, all these factors are creating social isolation and loss of intimacy that resulted into the emergence of psychological problems among the people (Imran *et al.*, 2020). Fake news and misinformation further worsen the situation and added on the psychological problems (Bai *et al.*, 2020; Brennen *et al.*, 2020). Thus, this study shed light on the factors of psychological problems faced by individuals during COVID-19 in Pakistan.

Review of the literature

A substantial amount of research focused on psycho-social aspects of COVD-19 around the world. These studies revealed the multiple factors of psychological problems due to

COVID-19 (Benatar and Daneman, 2020; Brouder *et al.*, 2020; Freedman, 2020; Ghosh *et al.*, 2020; Hogan, 2020; Ioannides and Gyimóthy, 2020; Van Lancker and Parolin, 2020). It has also been observed that research scholars conducted studies on similar nature of psychological problems experienced by individuals and school children (Shoaib and Abdullah, 2020; Van Lancker and Parolin, 2020), effects on elderly people (Previtali *et al.*, 2020), mental and psychological problems (Mukhtar, 2020), psychological health of children (Fegert *et al.*, 2020; Shoaib and Abdullah, 2020), COVID-19 impact on mental health (Ćosić *et al.*, 2020) and health behaviour (Coetzee and Kagee, 2020; Shoaib and Abdullah, 2020).

Gopalan and Misra (2020) revealed that the mental well-being of individuals is badly affected by the socio-economic implications of COVID-19. Moreover, the study of Ćosić *et al.* (2020) also highlighted that the diverse impacts of COVID-19 on psychological well-being among family members. Furthermore, Godinic *et al.* (2020) also asserted that it not only affects the psychological health of individuals but also impacted the social identity of the individuals the world over. Similarly, the study findings of Gopalan and Misra (2020) pointed out that COVID-19 had severe socio-economic implications on the global health-care system. In addition to these studies, multiple factors of psychological problems were reported during COVID-19 including loneliness, isolation and fear (Banerjee and Rai, 2020; Shoaib and Abdullah, 2020), socio-economic factors (Alradhawi *et al.*, 2020), lack of recreational activities (Begović, 2020; Brouder *et al.*, 2020; Mansfield, 2020), socio-economic cost of safety equipment (Buheji *et al.*, 2020), social isolation and lack of intimacy (Mucci *et al.*, 2020), physical and social distancing (Chatterjee, 2020; Özdin and Bayrak Özdin, 2020) and fake news and misinformation (Brennen *et al.*, 2020). It is appropriate to mention that all these factors (i.e. risk of infection, social distancing, social isolation, etc.) are included in the present study that provide insights to address the issues of psychological well-being particularly in Pakistan and generally in world facing the epidemic situations of COVID-19. Based on a review of the literature, the following conceptual framework is developed to apply structural equational modelling (SEM) to test the hypotheses. Research revealed that the fake news further worsened the situations when rumours loaded unverified information (Rodrigues and Xu, 2020). Tapia (2020) and Lovari (2020) asserted that although the people were fear of being infected, fake news added fuel to the fire. Due to the fake news, people were more conscious about the pandemic that also benefitted owing to the extra care against the novel virus spread. On the other hand, Greene and Murphy (2020) noted that such fake news affected the people, and they suffered from psychosocial impacts. Moreover, Calvillo *et al.* (2020) also noted that even though the fake news stressed the people, they were more careful regarding the health concerns. In addition, the social media has been found a great source of floating the fake news. Nowadays, social media is the major source of getting information; however, most of these platforms have been used to spread fake news. Pennycook *et al.* (2020) pointed out that people relied on social media news while I witnessed most people spreading the fake information about the virus. Thus, this fake information about the novel virus further added on the psychosocial impacts on the lives of people. For example, the people had anxiety, stress, tension, distress and fear of infection. It is also highlighted by Lovari (2020) in developed countries. On the other hand, Rodrigues and Xu (2020) pointed out the psychosocial impacts on lives of people in developing countries (see Figure 1).

H1. The risk of infection has direct effects on social distancing, cost of personal protective equipment and social isolation of individuals during COVID-19.

H2. The cost of PPE and risk of infection has a direct impact on the loss of intimacy of individuals during COVID-19.

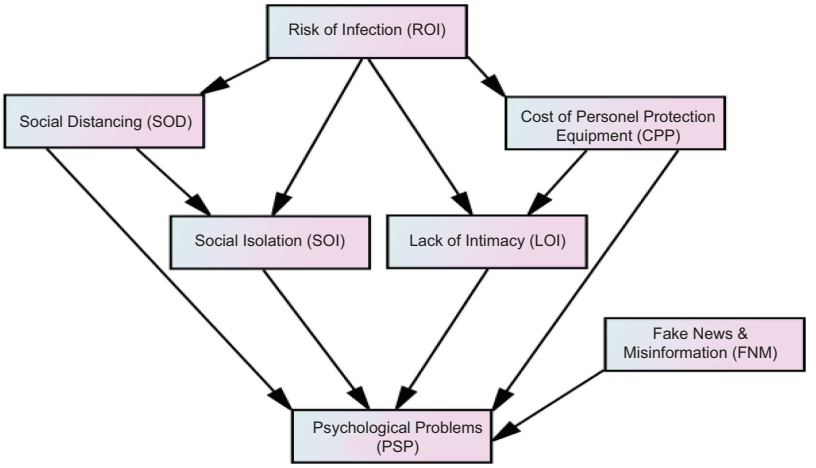

Figure 1.
Conceptual framework

H3. The social distancing has a direct impact on social isolation and psychological problems faced by individuals during COVID-19.

H4. The cost of PPE, social isolation and loss of intimacy have favourable positive effects on psychological problems of individuals through the mediation of fake news and misinformation during COVID-19.

Materials and methods

This study is conducted in Pakistan by using an online survey technique. The rationale to opt this method was based on the country lockdown situations, social distancing and for the care of the respondents. The survey form was circulated among 9,812 individuals by means of social media tools and software, i.e. WhatsApp, Facebook Messenger and email. Among the shared survey forms, a total of 1,536 people participated and responded the questionnaire from four provinces along with Azad Jammu and Kashmir (AJ&K) and Gilgit-Baltistan. It is pertinent to mention here that we used three independent variables, i.e. risk of infection, social distancing and cost of personal protection equipment and two path variables, i.e. social isolation and lack of intimacy. Moreover, fake news and misinformation was used as an intervening variable and psychological problems as a dependent variable. An attitudinal scale consisting of statements to measure (dis)agreement of the individuals facing the current situations of COVID-19 was administered. The ethical considerations and confidentiality of the respondents were opted by describing the purpose of research on the first page of the questionnaire. Moreover, the scale was pretested and the value of Cronbach's alpha was reported from 0.73 to 0.86. Furthermore, the SEM technique was employed to test the model.

Results and discussion

The model portrayed the causal relationship between seven different measurements of psychosocial aspects of COVID-19. To test the hypothesis, primary data from 1,536 individuals were used. Here, there are three independent variables (exogenous), one dependent variable (endogenous) and one variable used as a moderator variable named fake news and misinformation. Moreover, two path variables are also used named "social

isolation" and "lack of intimacy". On the question measuring variables, individuals were asked to express their (dis)agreement with certain relevant statements on a five-level Likert scale. Before going to discuss the model, it is important to describe the demographic characteristics of the participants.

Both females and males participated to fill the online questionnaire and their age bracket was 21–58 years. The sample was mixed from the rural and urban geographical locations of the country. Moreover, more than half (62%) of the participants were married and residing with their families during current epidemic situations, i.e. COVID-19. Moreover, all participants were literate and belong to different occupational positions.

Hypothesis testing

Hypothesis 1: *The risk of infection has direct effects on social distancing, cost of PPE and social isolation of individuals during COVID-19.* The results support hypothesis 1 that there are direct favourable positive effects, risk of infection has direct effects on social distancing, cost of PPE and social isolation of individuals during COVID-19. Furthermore, the calculated results also show that risk infection of COVID-19 has direct effects on social distancing ($\beta = 0.269$ and $p = 0.000$), cost of PPE ($\beta = 0.266$ and $p = 0.000$) and social isolation ($\beta = 0.114$ and $p = 0.000$). The study findings of Gopalan and Misra (2020) also reveal that cost of equipment and risk of infection during COVID-19 is creating adverse effects on the psychological well-being of individuals.

Hypothesis 2: The cost of PPE and risk of infection have a direct impact on the loss of intimacy of individuals during COVID-19. Hypothesis 2 of the study is supported by the tabulated data that there are direct effects of the cost of PPE and the risk of infection on the loss of intimacy of individuals during COVID-19. Furthermore, the statistical results also show that cost of PPE ($\beta = 0.206$ and $p = 0.000$) and risk of infection ($\beta = 0.326$ and $p = 0.000$) have favourable positive direct effects on loss of intimacy of individuals during COVID-19. Several studies also highlight the cost of protective equipment and the risk of infection in adding to isolation and loss of intimacy along with psychological problems (Buheji *et al.*, 2020; Godinic *et al.*, 2020).

Hypothesis 3: The social distancing has a direct impact on social isolation and psychological problems faced by individuals during COVID-19. The statistical analysis findings support hypothesis 3 that there are direct favourable positive effects of social distancing on social isolation and psychological problems faced by individuals during COVID-19. Furthermore, the results of the model also show that social distancing has direct favourable positive effects on social isolation ($\beta = 0.191$ and $p = 0.000$) and psychological problems ($\beta = 0.127$ and $p = 0.000$) faced by individuals during COVID-19. The study of Banerjee and Rai (2020) also asserts that social distancing, isolation and loneness are linked with psychological problems of individuals during COVID-19. Moreover, the study of Chatterjee (2020) also supports the argument.

Hypothesis 4: The cost of PPE, social isolation and loss of intimacy have favourable positive effects on psychological problems of individuals through the mediation of fake news and misinformation during COVID-19. The results in Table 1 support hypothesis 4 that there are direct effects of cost of PPE, social isolation and loss of intimacy on psychological problems of individuals through the mediation of fake news and misinformation during COVID-19. Furthermore, the results of the model also show that cost of PPE($\beta = 0.223$ and $p = 0.000$), social isolation ($\beta = 0.198$ and $p = 0.000$) and loss of intimacy ($\beta = 0.404$ and $p = 0.000$) have favourable positive effects on psychological problems of individuals through the mediation of fake news and misinformation ($\beta = 0.083$ and $p = 0.000$) during COVID-19. The study findings of Brennen *et al.* (2020) are similar to the present study findings. Furthermore, social distancing is also reported as contributing to the psychological problems of individuals

Variables			Standardized regression weights	Estimate	SE	CR	*p*
ROI	→	CPP	0.266	0.259	0.024	10.792	***
ROI	→	SOD	0.269	0.276	0.025	10.944	***
ROI	→	SOI	0.114	0.089	0.020	4.426	***
CPP	→	LOI	0.206	0.211	0.025	8.605	***
ROI	→	LOI	0.326	0.326	0.024	13.655	***
SOD	→	SOI	0.191	0.145	0.020	7.448	***
SOD	→	PSP	0.127	0.110	0.018	6.081	***
CPP	→	PSP	0.223	0.203	0.019	10.505	***
LOI	→	PSP	0.406	0.361	0.019	19.102	***
SOI	→	PSP	0.198	0.226	0.024	9.534	***
FNM	→	PSP	0.083	0.048	0.012	4.113	***

Variances	Estimate	SE	CR	*p*
ROI	5.476	0.198	27.704	***
FNM	12.922	0.466	27.704	***
e1	5.342	0.193	27.704	***
e2	4.837	0.175	27.704	***
e4	4.460	0.161	27.704	***
e3	3.120	0.113	27.704	***
e5	2.725	0.098	27.704	***

Chi-square = 1440.369, df = 10, probability level = 0.000
AGFI = 0.91, GFI = 0.94, CFI = 0.92 and RMSEA = 0.062
Total number of observations (*n*) = 1,536

Table 1.
Standardized regression weights, estimates and variances (n = 1,536)

during COVID-19 (Chatterjee, 2020; Obi-Ani *et al.*, 2020; Shahi and Nandini, 2020). Similarly, studies also reveal that the socio-economic cost of COVID-19 is adding psychological problems to individuals in several countries (Alradhawi *et al.*, 2020; Gopalan and Misra, 2020; Sloan, 2020; Van-der Linden *et al.*, 2020).

Indirect effects of the model

The study findings reveal that the risk of infection has indirect effects (standardized estimate = 0.055***) on the loss of intimacy of individuals through the medication of the cost of PPE during COVID-19. Similarly, the risk of infection has indirect effects (standardized estimate = 0.059***) on psychological problems of individuals through the medication of the cost of PPE during COVID-19. Moreover, the risk of infection has indirect effects (standardized estimate = 0.051***) on the social isolation of individuals through the medication of social distancing during COVID-19. Furthermore, the risk of infection has indirect effects (standardized estimate = 0.034***) on psychological problems of individuals through the medication of social distancing during COVID-19. Likewise, the risk of infection has indirect effects (standardized estimate = 0.133***) on the psychological problems of individuals through the medication of loss of intimacy during COVID-19. In the same way, the risk of infection has indirect effects (standardized estimate = 0.023***) on psychological problems of individuals through the medication of social isolation during COVID-19. Besides, the cost of PPE has indirect effects (standardized estimate = 0.084***) on psychological problems of individuals through the medication of loss of intimacy during COVID-19. Likewise, social distancing has indirect effects (standardized estimate = 0.038***) on

psychological problems of individuals through the medication of social isolation during COVID-19 (see Table 2).

In addition to the findings of the study, it is argued that the severity of disease overwhelmed the healthcare services and workers by exhausting the resources and revealing that how ill-equipped world is to tackle outbreak (Özdin and Bayrak Özdin, 2020; Plohl and Musil, 2020; Previtali *et al.*, 2020; WHO, 2020a, b and c). It engulfed the entire world in a very short time and affected almost every sphere of life leaving the enduring impacts on socioeconomic conditions badly (Buheji *et al.*, 2020; Godinic *et al.*, 2020; Gopalan and Misra, 2020). Besides, it has created the distress (Alradhawi *et al.*, 2020), anxiety (Ćosić *et al.*, 2020) and depression (Fegert *et al.*, 2020) among the people bringing psychological impacts on the lives of people. Consequently, mass hysteria rapidly expanded the panic concerning the outbreak, i.e. the fake news through social media and seems to be detrimental in the future (Obi-Ani *et al.*, 2020; Shahi and Nandini, 2020; Van-der Linden *et al.*, 2020). A similar situation prevailed in Pakistan, which has now turned worst (see Figure 2).

Indirect path	Unstandardized estimate	Lower	Upper	*p*-value	Standardized estimate
ROI→CPP→LOI	0.055	0.042	0.071	0.001	0.055***
ROI→CPP→PSP	0.053	0.038	0.070	0.001	0.059***
ROI→SOD→SOI	0.040	0.030	0.052	0.001	0.051***
ROI→SOD→PSP	0.030	0.017	0.043	0.001	0.034***
ROI→LOI→PSP	0.118	0.100	0.139	0.001	0.133***
ROI→SOI→PSP	0.020	0.012	0.030	0.001	0.023***
CPP→LOI→PSP	0.076	0.059	0.097	0.001	0.084***
SOD→SOI→PSP	0.033	0.023	0.045	0.001	0.038***

Note(s): Significance of estimates: ***$p < 0.001$, **$p < 0.010$ and *$p < 0.050$

Table 2.
Indirect effects of variables ($n = 1{,}536$)

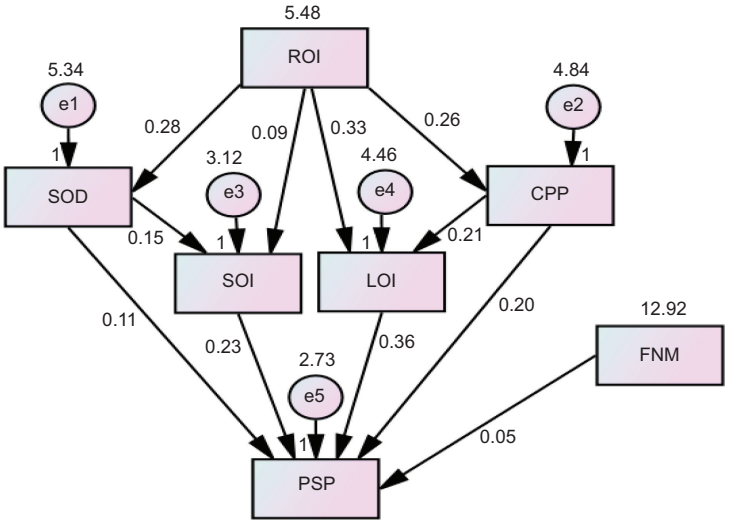

Figure 2.
Model fit path diagram

Conclusion

We reach on the conclusion that the COVID-19 pandemic affected worldwide specifically the psychological health of individuals. Several factors are contributing during the epidemic period. These factors include risk of infection, social distancing, cost of PPE and social isolation. Moreover, loss of intimacy and misinformation are also reported as a contributing factor of psychological problems. Thus, this concludes that the cost of PPE, social isolation and loss of intimacy have favourable positive effects on the psychological problems of individuals through the mediation of fake news and misinformation during COVID-19. There is a dire need and assistance by individuals, government, community and family members in facilitating social intimacy and assistance to overcome psychological problems. It is also suggested to the Department of Health to take the necessary measures of disseminating the accurate information during such crisis to avoid the fake information and curtail the psychosocial impacts.

Research implication

The present research provided the awareness and knowledge in terms of psychological problems faced by individuals during COVID-19. It is an addition to the existing body of knowledge in the field of health and well-being to minimize the risk of COVID-19 by using personal protection equipment. This research may be helpful for the Ministry of Health (MoH) Pakistan to develop the information about any crisis in future.

Future research

This paper is purely limited to the quantitative approach and also limited to variables. Thus, future research can be conducted using a qualitative approach or mixed method approach (qualitative and quantitative). Further, thematic analysis method can also be used to analyse the phenomena of COVID-19 in future. This research may be helpful for the MoH, Pakistan to know the psychosocial problems of the people during the pandemic.

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Health promotion through youth empowerment to prevent and control smoking behavior: a conceptual paper

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Abstract

Purpose – This paper aimed to review globally the empowerment programs for the prevention and control of smoking behavior among youths, to examine the role of empowerment in health promotion, to explore the stages of health promotion through community empowerment strategies including planning, implementation and evaluation. Finally, this paper will develop a model of youth empowerment to prevent and control smoking behavior that reflects theory and experience drawn from the literature.

Design/methodology/approach – This review synthesized articles on community empowerment and health promotion, youth empowerment programs for tobacco prevention and control globally from books and electronic databases from the Universitas Gadjah Mada (UGM) library in the publication period 2000–2020. Relevant literature was selected and critically reviewed which reflected the role empowerment in health promotion, stage of community empowerment strategy as described by Laverack and youth empowerment concept in tobacco control as described by Holden.

Findings – Documents that specifically discuss empowerment programs for smoking prevention and control are still limited. The findings document that youth empowerment in tobacco control do not fully integrate the theory empowerment as described by Laverack and Holden. This paper provides information about the stages of youth empowerment, and a conceptual framework of youth empowerment for the prevention and control of smoking behavior. Youth empowerment is done through the direct involvement of youth in programs starting from program design, planning, implementation and evaluation. Indicators of the success of the empowerment process are reflected in the increase in the empowerment domain. Meanwhile, the output of empowerment can be seen from the individual- or group-level changes.

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Originality/value – This paper proposes a model of youth empowerment for the prevention and control of smoking behavior among youths based on theory and experience in the field.

Keywords Youth empowerment, Smoking prevention, Tobacco control, Health promotion

Paper type Conceptual paper

1. Introduction

Youths enter the transition from childhood to adulthood at a critical age because during this period they experience the development of specific skills to enter the world of work and begin to contribute to economic productivity (Rosen, 2004; Salam *et al.*, 2016). Most of the nations in the world define youth as people aged 10–19 years while some define them specifically as people aged 15–24 years (Das Gupta *et al.*, 2014; United Nations, 2014). However, the interchangeable use of the two terms: youth and adolescents has been popular since 1985 when the first international meeting about world youth of the United Nations was held (Sawyer *et al.*, 2018) so that the two terms can be substituted for each other.

Currently, a quarter (1.8 billion) of the world's population is adolescents and young people aged 10–24 years, with as much as 90% of this number living in developing countries (Das Gupta *et al.*, 2014; United Nations, 2014). Meanwhile, almost a quarter (24.15%) of Indonesia's population are youth aged 16–30 years, and 67.76% of the youth aged 16–24 years are generally at the high school and university level (Badan Pusat Statistik-Central Statistics Agency, 2018). Youth or adolescents are potential leaders who will determine the fate of the nation in the future so that they need skills to live and work productively. Furthermore, these youth, as the motor of development, must always be in a healthy condition. This is necessary so that they can proactively develop themselves and manage various development resources for the benefit of society and the State (Badan Pusat Statistik-Central Statistics Agency, 2018).

Youths are a group of people who are almost always assumed to be in good health. But in reality, they face serious health challenges or problems, and many youths die prematurely due to accidents, suicide, violence, pregnancy complications and other diseases that can be prevented or treated (Pratiwi, 2013). About 70% of premature deaths in adults are related to behaviors that start in adolescence such as tobacco use, wrong eating habits and risky sexual behavior (Das Gupta *et al.*, 2014; Rosen, 2004). Besides, there were around three million adolescents who died in 2012, and the majority of them could be prevented or controlled (World Health Organization, 2014).

Adolescence is a period of turbulence from the development of attitudes and behavior. It is often characterized by risky trial and error behavior such as the use of tobacco products (Albert-Lőrincz *et al.*, 2019), so as a result the burden of disease and health risks change rapidly in adolescence (Sawyer *et al.*, 2018). Smoking behavior is a widespread phenomenon and is accepted as a common habit among most young people in Indonesia (Ng *et al.*, 2007). Smoking behavior that starts in adolescence will generally remain during adulthood (US National Cancer Institute and World Health Organization, 2016). The younger the youth, the more likely it is to become a regular smoker, and the less likely it is to quit smoking (Wheeler *et al.*, 2007).

Tobacco use is the leading cause of preventable death in the world (World Health Organization, 2011) and globally, smoking has a significant impact on premature death (Linstrom, 2018). One in ten deaths in the world is caused by tobacco use (World Health Organization, 2017). If this trend continues, by 2030 tobacco use will kill more than eight million people worldwide each year with 80% of deaths occurring in developing countries (US National Cancer Institute and World Health Organization, 2016).

Indonesia is the country with the highest youth smoking rates in the world (World Health Organization (WHO, 2015). Meanwhile, the numbers of smokers who are over 15 years old are 67% for men and 2.7% for women (World Health Organization, 2018). Furthermore, one in

four youths in Indonesia is a smoker, both tobacco and e-cigarettes. This condition is evenly distributed in all provinces in Indonesia, so it is very worrisome considering that the youth is the nation's next-generation (Badan Pusat Statistik-Central Statistics Agency, 2018). Accordingly, it is necessary to make various long-term efforts to control the number of smokers in Indonesia and in the world.

Based on the review, information was obtained that indicated health promotion methods are more effective than other smoking prevention methods (Golechha, 2016). Health promotion interventions consist of three main approaches: 1) reaching the wider community such as social marketing and mass media interventions; 2) reaching out to individuals, namely through peer education, and motivational interviews; and 3) reaching out to the community through community mobilization and environmental change with advocacy and setting-based interventions. Of these three methods, community mobilization is an effective method for smoking prevention and smoking cessation. Community mobilization is an essential method of health promotion that aims to empower the community. Empowering people to change the community's social domain is not only sustainable but very effective (Golechha, 2016). Youth empowerment models are more effective in smoking prevention than quitting smoking once someone has tried smoking (Wheeler *et al.*, 2007). This strategy is believed to contribute to initiating social change (Backinger *et al.*, 2003).

2. The objective and theoretical base

The review aimed to examine the role of empowerment concerning health promotion, to explore the stages of health promotion through community empowerment, while at the same time constructing a youth empowerment model for the prevention of and control smoking behavior. To fulfill the objective of the review, youth empowerment, health promotion, smoking prevention and tobacco control, participatory action research was considered as the primary focus. The method of searching for journal articles was done through an electronic database subscribed by the Universitas Gadjah Mada (UGM) library in the publication period 1 January 2000–24 July 2020 such as Sage publication, Health Care Information, Springer, Johns Hopkins University Press, British Medical Association, Wolters Kluwer–Medknow Publications, Elsevier BV and BioMed Central Ltd. The keywords "youth empowerment", "smoking prevention", "tobacco control", "health promotion" and "participatory action research" in various combinations and English language almost 192 articles. Furthermore, literature search is refined based on articles that have been reviewed by scholarly and peer reviewers with the computer system so that 35 articles are obtained. The article was excluded if there were no empowerment activities, empowerment stage and/or youth participatory, there were no empowerment output and outcome, they were about organizational empowerment, they were only concerned with health promotion evaluation and chronic diseases intervention. Finally, there were 11 journal articles, and a book from (Laverack, 2007) entitled "Health Promotion Practice: Building Empowered Communities" were selected. Relevant sections were summarized, mapped and analyzed using qualitative methodology to generate common themes.

For this review, the empowerment theory and health promotion from Laverack were chosen as he is a leader in health promotion and empowerment and has worked for more than 30 years in Europa, Africa, Asia and the Pacific regions with a significant range of professional experience in a cross-cultural setting that facilitates at both a theoretical and practical level. Furthermore, the article Conceptualizing youth empowerment within tobacco control from (Holden *et al.*, 2004) was also chosen as a theoretical basis because it was the only article that comprehensively discussed youth empowerment strategies in tobacco control and evaluated program output. Due to the lack of rigorous evaluation of empowerment programs in the literature and few papers about empowerment strategy for tobacco control, the initial of

a conceptual paper was created as a basis for implementation research on health promotion through youth empowerment for smoking prevention and control.

The research literature offers little direct guidance for extending the application of youth empowerment (YE) to youth-led smoking prevention and control initiatives, although there are a few models that link empowerment theoretically to positive youth development (Dunn and Pirie, 2005; Holden *et al.*, 2004; Mohajer and Earnest, 2009; Wilson *et al.*, 2008). Consequently, a panel of experts in the field was convened as reviewer to asses a conceptual model that would define the key conceptual components of youth empowerment as applied to smoking prevention program. This article presents the conceptual framework that resulted from this process.

The finding from the literature review, summaries from Laverack's book and Holden's publications were condensed, mapped and analyzed based on content of every articles until three recurring themes or elements emerged that were consistently mentioned in program evaluation and/or recommendation. The summary of themes is present below as a model of health promotion through youth empowerment to prevent and control smoking behavior.

1. The role of empowerment in health promotion
2. Health promotion through youth empowerment in tobacco control
3. The model of Health Promotion through Youth Empowerment to Prevent and control Smoking Behavior

This proposed model could form an evidence-based youth empowerment framework for preventing and control smoking behavior that can be adapted to local context and culture. Many of these points have common characteristics with other participatory processes, notably action research (Smith *et al.*, 2010). Each element of the model is discussed below in more detail.

3. The role of empowerment in health promotion

Health promotion in general is a process involving individuals, groups and communities. The purpose of health promotion is to enable people to control and improve their health and the factors that affect health (Laverack, 2007). This meaning is contained in the Ottawa Charter for Health Promotion and the Bangkok Charter for Health Promotion (World Health Organization, 2009). Health promotion is the main function of public health that contributes to overcoming infectious and non-communicable diseases and other health threats (World Health Organization, 2009). At present, policymakers and health promotion practitioners consider that empowering the community as a vehicle to improve public health status. The Ottawa Charter identifies community empowerment as a core concept in health promotion. Community empowerment is the most important part of creating health impacts and as part of a health promotion strategy (Kasmel and Andersen, 2011).

Empowerment as a health promotion strategy can improve the health status of individuals, groups and communities (Laverack, 2006). Empowerment is the main concept of health promotion (Kasmel and Tanggaard, 2011; Woodall *et al.*, 2010) and is a process of enabling communities, organizations and/or individuals to use their strengths effectively for a better life change (Minkler and Wallerstein, 2008; Woodall *et al.*, 2010). The key domain of community empowerment is to enable the community, in this case, youth, to better manage what they have socially and structurally to achieve social and political change (Laverack, 2006, 2007). Society in this context is a group of different individuals with dynamic social relationships, forming groups and taking action to achieve certain goals. Furthermore, society has a characteristic spatial dimension, namely location and non-spatial dimensions,

namely based on interests, issues and identity (Laverack, 2007). For example, in this research, the community is the youth community.

Empowerment can be achieved through planning strategies that enhance each domain that community members have identified. There are nine domains of community empowerment, namely: 1) increasing participation, 2) developing local leadership, 3) developing empowerment of organizational structures, 4) increasing capacity in problem assessment, 5) increasing people's ability to be critical, 6) increasing resource mobilization in targets, 7) strengthening relationships with other people and other organizations outside the target community, 8) creating fair relationships with others and 9) increasing control over program management. These domains have been used to develop community empowerment in health promotion programs in Asia, Africa and the Pacific (Laverack, 2006, 2007).

Community empowerment is a health promotion strategy conducted by developing and optimizing the existing potential in the community and by involving the community from the start of the program. Community involvement from the start of the program aims to enable the community to participate in every stage of the program being done (Bartholomew *et al.*, 2006). This form of empowerment activity can be realized through various activities, including health education, organizing and community development in the form of, for example, cooperatives, and training for the ability to increase family income (Bartholomew *et al.*, 2006). Meanwhile, according to (Laverack, 2006), community empowerment is a process that involves components of society continuously in a strong relationship to overcome differences in individuals and social groups in society. However, in the context of a program, empowerment is a process with individuals, groups and communities that are more organized and broadly shaped based on community action. The added value of empowerment is that it gives the individual, group or community greater control, in achieving healthier, sustainable lifestyles (Laverack, 2017).

4. Health promotion through youth empowerment in tobacco control

Youth empowerment is a community-based health promotion program where community participation is an inseparable part of this program, but community input is usually limited to the role of input or volunteer workers in program implementation (Holden *et al.*, 2004). Mechanisms for community involvement in health promotion involve the formation of local coalitions (Butterfoss and Kegler, 2002). Community participation is currently considered critical to a program's success and coalition building is one of the techniques to facilitate this process (Wallerstein and Duran, 2003). The program mission and evaluation design of community interventions remain under the control of researchers and experts who are generally outside the community. The tradition of using problem-solving between researchers and the community is through mutual understanding of problems and sharing the common goals of solving these problems (Holden *et al.*, 2004). Community participation is currently being adopted more critically, in a process that is consciously done to improve the balance of power between researchers and society (Minkler and Wallerstein, 2008).

Empowerment is related to the emancipatory tradition because community control of the health promotion process is predicted to have a beneficial effect on participating members of the community as well as the larger community they represent (Holden *et al.*, 2004). The shift in meaning toward the emancipatory tradition coincides with a change in the concept of the role of adolescents in terms of prevention from risk factors to the empowerment paradigm (Minkler and Wallerstein, 2008). Prevention is starting to change from preventing something negative to a new paradigm that emphasizes the need to promote positive development in adolescents through youth empowerment. The youth empowerment model is not a community problem that requires prevention, but adolescents are used as a community asset that becomes empowered to make their lives better as well as the wider community (Holden *et al.*, 2004).

The youth empowerment model has been implemented in America in a program known as SYMATU (Statewide Youth Movement Against Tobacco Use). This program is initiated by The American Legacy Foundation and aims to support youth leadership and encourage youth-driven initiatives that ultimately contribute to positive development opportunities in youth (Holden *et al.*, 2004). This program was conducted in 2000 for three years in 17 states in the United States and the evaluation was designed to collect descriptions of country program implementation data at the local level (Holden *et al.*, 2004). The youth empowerment model emphasizes that adolescents need to participate actively in positive activities so that they gain relevant and useful skills and get positive recognition of their involvement (Holden *et al.*, 2004, 2005). Youth empowerment stimulates youth activity in advocating tobacco control policies which indirectly provides useful skills for adolescents such as speaking in front of policymakers, organizing community members, writing articles in newspapers and disseminating petitions (Holden *et al.*, 2004).

The aim of the evaluation design was not to detect the program's impact on adolescent smoking behavior change, because it was a longer outcome than the length of time the study data was collected and was a secondary objective of the SYMATU program. The SYMATU program places more emphasis on descriptive analysis concerning the possibility of empirical regulation between participant characteristics, group structure and youth initiation related to tobacco control (Holden *et al.*, 2004).

Another study explained that a Students Working Against Tobacco (SWAT) program in Florida US was initiated by the Oklahoma State Department of Health (OSDH). The objectives of this program are to (1) involve youth in community action against tobacco, (2) foster meaningful youth-led prevention activities and (3) building state and local youth coalitions. The SWAT team consists of volunteer students and on-site adult partners at the intermediate and upper levels (Ross *et al.*, 2015).

This goal was operationalized through the development of three policy-focused campaigns and appropriate support materials such as 1) the campaign involves youth in advocating for local tobacco-free school policies and includes a secondary awareness campaign after the policy is issued; 2) focus on reducing exposure to secondhand smoke, with the aim of local Clean Air Regulations policies and local smoke or tobacco-free park regulations; 3) addressing youth access to tobacco in retail settings. The campaign aims to pass local regulations prohibiting the sale of tobacco to minors and ensure compliance with existing youth access laws (Ross *et al.*, 2015).

The implementation of each campaign follows a similar structure and is designed to occur over the course of one school year. First, SWAT members watched and discussed a series of online training videos, the information and performances designed to appeal to young people. The videos cover an outline of each campaign, policy change, public speaking, project planning, teamwork and media advocacy. After completing the video training, the team selects a campaign and plans its activities for the year. Implementation centers on completing a predetermined measure of progress (MOP) intended to address each campaign policy objective. MOP is designed to involve youth in data collection, education and local advocacy. Each MOP is assigned a point value to promote and incentivize high-impact advocacy strategies and to unite SWAT teams by earning points together (Ross *et al.*, 2015).

The follow-up of adolescents who were involved in the campaign reported much more positive tobacco-related attitudes. They also showed a higher level of confidence in their ability to carry out campaigns and expose the tobacco industry (Ross *et al.*, 2015). Some of the previous findings support the recommendation that youth programs should build flexibility and encourage youth to engage in creative problem solving (Kirby and Bryson, 2007; Roth and Brooks-gunn, 2003).

The next finding is a pilot project to reduce and prevent tobacco use among Southeast Asian American youth (Lee *et al.*, 2012). The project is a collaboration between researchers at

a nonprofit public health research center and the community and staff of Southeast Asian Young Leaders (SEAYL), a youth development program in the West Contra Costa County region of California. SEAYL engaged in conducting primary research on the social environment for tobacco use in West Contra Costa County with some activities, e.g.: community-based research, including community surveys, Photovoice and community assessment (Lee *et al.*, 2012).

The community survey aimed to understand the broad context of tobacco use and the tobacco problem in their community. Youth developed and fielded two community surveys. The survey assesses community assets that reinforce organizing (Kretzmann and John L. McKnight) 27, and tobacco use and exposure. Furthermore, the photovoice program aims to facilitate the development of SEAYL members' critical awareness about tobacco and their communities. Besides, Youth participants conducted specific tobacco assessments such as surveys of tobacco advertisements and product availability at retail outlets (Lee *et al.*, 2012).

Meanwhile, Asian Tobacco Education, Cancer Awareness and Research (ATECAR) is a long-term effort to tackle the tobacco-related cancer problem of Asian-Americans in the Delaware Valley region of Pennsylvania (PA) and New Jersey (Ma *et al.*, 2004). The ATECAR's CBPR model represents a pioneering effort in the fastest-growing ethnic/racial community in the United States. Its activities include community-based participatory research (CBPR) and Community-Based Needs Assessment Surveys. Its main purpose is to assess diverse behaviors, knowledge and attitudes regarding tobacco use and tobacco-related cancer issues and to identify important and relevant issues on which to focus the research efforts (Ma *et al.*, 2004).

In line with the survey results, multifaceted and multi-focused tobacco education, prevention and intervention programs have been initiated (Ma *et al.*, 2004). The focus of this program includes development/adaptation, field testing and implementation of educational packages; community partner training; recruitment of young Asian and Asian American researchers; contact with local and regional media and preparation of anti-tobacco literature; and the establishment of an ATECAR resource center for use by the Asian American community. Examples of program aspects include the youth PASS program and the adult PASS (Preventing Asians from Smoking and Secondhand Smoke); ACT program (Asian youth Choose Tobacco-free); and the Asian QUIT (Quit Using Tobacco) program. Youth and adult PASS is a tobacco prevention/education program that aims to increase general knowledge about and awareness about tobacco-related cancers and health risks among Asian Americans.

ATECAR's core activity is building community capacity. A successful capacity building program is critical to CBPR and constitutes one of the most important factors contributing to program sustainability. ATECAR uses a variety of strategies to enhance capacity building in the Asian-American community which includes, among other things, minigrant programs, bridging resources and communities and developing writing and proposal skills. An important principle in the participatory research process is to create a conducive environment for learning and empowerment, which supports, encourages and enhances the capacities and skills of the community. ATECAR can bridge the various elements in participatory processes, narrow cultural and language gaps and facilitate dialogue on issues of public concern (Ma *et al.*, 2004).

Furthermore, in North Carolina, there was a program of teen empowerment movement to prevent tobacco use by North Carolina's youth. The activities such as: promoting 100% tobacco-free schools, reducing youth access to tobacco products, promoting smoke-free air and pro-health media messages (Martin *et al.*, 2001). Another innovative component of the North Carolina Youth Empowerment Study (NC YES) project is that it takes a comprehensive approach to evaluate the impact of youth empowerment programs (Martin *et al.*, 2001). This new evaluation process complements youth empowerment approaches by actively engaging

youth in evaluation. NC YES has established an 18-member Advisory Board comprising equal numbers of teen and adult leaders from across the state. It will actively shape the direction of the evaluation. By involving program participants in evaluation efforts, the youth and adults will develop their evaluation knowledge and skills and thus become further empowered (Martin *et al.*, 2001; Ribisl *et al.*, 2004)

The NC YES is an evaluation study of tobacco use prevention programs involving youth in a participatory method for 3 years. The aims of this study were to (1) establish an advisory board consisting of lay youth and adults in a participatory research process, (2) document the characteristics of youth programs for tobacco use prevention and control in North Carolina and (3) track the role of youth involvement in initiating and implementing 100% tobacco-free policies in local school districts (Martin *et al.*, 2001; Ribisl *et al.*, 2004). Youth empowerment is believed to be very promising, but more research and sufficient resources are needed for it to be successful as a viable tobacco use prevention and control strategy. Also, youth-led policy advocacy in tobacco-producing states appears to require a unique blend of resources, funding, expertise and political will (Ribisl *et al.*, 2004).

5. Model of health promotion through youth empowerment to prevent and control smoking behavior

Health promotion is generally implemented as an activity tailored to the context of the program. These activities are conventionally managed and monitored by health promoters which divide a period of identification, design, assessment, approval, implementation and evaluation. The framework of health promotion through youth empowerment in tobacco control applies the theoretical framework of the stages of empowerment from (Laverack, 2007) and the youth empowerment model in tobacco control (Holden *et al.*, 2004). There are four stages of youth empowerment in tobacco control, consist of (a) the program design, (b) planning of empowerment, (c) implementation of empowerment and (d) evaluation of empowerment. It can be seen in the Appendix of Figure 1.

5.1 Youth empowerment program design

Program design reflects problems clearly stated in the statement of purpose, while identification uses appropriate development indicators and prioritizes assessments of risks and assumptions (Laverack and Labonte, 2000; Laverack, 2007). Using a participatory planning approach to the target will be more empowering, for example, by involving participants and helping to resolve conflicts that arise during implementation and evaluation. In the context of empowerment, the concept of the program itself changes, not just as a matter of time limits, one-time education or marketing activities, but the program becomes an important vehicle for health promoters to build relationships with health authorities or non-governmental organizations and community members. Through this relationship, financial, material and knowledge, resources become available for community members to increase their capacity through education and marketing activities or to manage specific public policy changes affecting health determinants (Laverack and Labonte, 2000).

The youth empowerment begins with the design of a program that consists of building trust with community leaders and youth in the research location through meetings and participation of researchers in activities organized by the youth. Next, it is essential to increase youth awareness about the importance of the program through socialization which is done at regular meetings held by the youth community. Moreover, there is a need for assessment to explore adolescent health problems, especially smoking behavior, efforts that can be made to prevent smoking behavior, perceptions of the meaning of empowerment and

identify determinants of youth empowerment processes. Determinants of the youth empowerment process include:

(1) *Adolescent predisposing characteristics*. There are certain characteristics in adolescents that will influence them to potentially engage in local efforts to tackle tobacco control (Holden *et al.*, 2004). It will influence youth participation in groups specifically for tobacco control. Predisposing characteristics include any experience of having been involved in the same group, reasons for joining a local group (e.g. personally motivated because of a desire to change their smoking environment or because of the experience of family members dying from smoking-related illnesses, rather than simply wanting to spend time with friends. friends), demographic characteristics (e.g. age, grade level, school achievement, college plans) and smoking environment at home or among friends (Holden *et al.*, 2004);

(2) *Group Characteristics*. These characteristics include features of the group's structure and the groups' climate as describe below. *Group structures* that need to be operationalized in youth empowerment groups include several components, such as incentives (types of incentives, if available or not for recruitment and subsequent participation promotion); decision-making processes (the extent to which adolescents lead the decision-making process with each group), relationships with existing adult groups (groups that get better support from adults can achieve outcomes or not and increase youth participation or not); opportunities to be involved (whether there are opportunities for youth to be involved, whether or not there are specifications for the role of youth to become leaders or decision-makers); the availability of resources and support (types of resources and support available for each group); *Group climate* includes group resilience, group cohesiveness, collective efficacy and outcome efficacy. Group resilience is the extent to which the group can survive when it fails to achieve its goals and their confidence in working when facing problems as a group that affects all group climates based on reports of participants in the group. Group cohesiveness: involves group members reporting whether the group is united in achieving goals or not, the way group members are committed to achieving common goals, the length of time group members spends together at formal meetings. Collective efficacy is the reach of group members thinking that they can do or work well together to achieve a goal. Outcome efficacy is one way to describe the belief that a certain behavior will produce a specific outcome. Question attributes on outcome efficacy include: how confident members of their group can influence adults and adolescents in their community about tobacco control, and how self-confidence of members of their group can reduce the amount of tobacco use in the community (Holden *et al.*, 2004).

(3) *Adult involvement*. The role of adults in the development of local youth groups is key to the program's success. Adult characteristics that are important for adolescents are a leader who can work in groups with characteristics of being able to relate to adolescents, listens to their ideas, is open to new innovative approaches and can facilitate the engagement process. Key support for adults also comes from parents such as providing transportation for youth activities, supporting and encouraging them to be involved in these types of initiatives. Additionally, support is needed from sponsors such as agencies that promote empowerment structures for groups. All of these attributes are applied to evaluation measures to determine the indirect impact of adult involvement on collective participation (Holden *et al.*, 2004)

The next step involves developing a definition of empowerment that is appropriate to the cultural contexts at the research location through participatory assessment of the empowerment

domain (Laverack, 2006, 2007; Laverack and Labonte, 2000) such as participation, capacity assessment problems, local leadership, organizational structure, resource mobilization, relationships with other parties, being critical, program management and relationships with outside agents (Laverack, 2006, 2007) in a participatory manner and finally, a summative rural appraisal. These domains are flexible, it is possible to change them if needed during the program, and sometimes not all nine domains are owned by the youth community.

5.2 Youth empowerment planning

The goal-setting and strategy selection are developed at this stage. In conventional health promotion programs, objectives developed during the design phase generally center on disease prevention, reducing morbidity and mortality, and lifestyle management such as changing health-related behavior. The goal of empowerment usually focuses on increasing people's ability to control factors that affect health. One example is smoking behavior in men in Latin America. This group is refugees who fled to Canada because of persecution in their homeland, their families experience stress in finding a home and work because of foreign cultures, cultural differences and they do not have certainty of life permanently (Laverack and Labonte, 2000). The objectives of health promotion programs focus on raising awareness of the risk factors for tobacco-related diseases, for example, no one smokes during planning meetings to develop youth centers (Laverack, 2007).

Furthermore, setting the goal of empowerment which is to increase the ability of adolescents to control and determine health choices that will have an impact on the prevention of smoking behavior. Some examples are through workshops or meetings to share ideas and experiences and learn techniques, models and experiences. The focus of the meeting on participatory activities includes discussions, problem-solving exercises and the results are action-oriented based on the agreement of the members. Meetings or workshops are flexible and require consideration of some basic elements such as group equality, dynamics, size and time for practice. Workshop participants represent the community or individuals represent groups to share interests and needs.

Moreover, health promotion programs employ strategies as diverse as awareness-raising campaigns, providing information and advice, influencing social policies, lobbying for change and training, often in combination with complex interventions (Laverack and Labonte, 2000). The most important aspect is that every strategy used is certainly related to and strengthens the empowerment strategy. The information obtained during the initial assessment serves as a basis for developing knowledge, skills and capacities to be more powerful. The objective of the planning strategy is to create positive action in each domain that needs improvement. The three simple stages of a planning strategy are a discussion of how to improve the current situation, develop a strategy to improve the current situation and identify the resources needed to implement the planning strategy. Based on the initial assessment of each domain, participants are asked whether the current situation could be improved or not in the youth group. If participants decide there are no current conditions that need to be improved, then no strategy can be developed in that domain. Developing a strategy to improve the current situation starts by making a list of activities to be carried out, determining time and goals, giving responsibility to certain individuals to carry out activities according to a predetermined time. Then, resources are assessed: participants assess both internal and external resources to improve the current situation. Identification of internal resources includes a commitment to strategy development, attending meetings, better interpersonal communication.

5.3 Youth empowerment implementation

Health promoters need practical methods for assessing and planning community empowerment strategies during program management and implementation (Laverack, 2007) developed and field-tested a new methodology for this purpose. The methodology is implemented through a one- to two-day workshop and involves several participants to conduct a self-assessment based on experience and knowledge. This phase consists of strategy implementation and management that increase empowerment domains. The section describes the mechanisms for youth empowerment programs which consist of increasing local leadership and management skills, increasing collective participation, improving the ability to identify problems, increasing the formation of organizational structures, improving the ability to relate to others, increasing resource mobilization, increasing cooperation with outside agents and increasing critical awareness among youth. Some activities to improve the empowerment domain, e.g. regular meetings to increase the flow of information between youth leaders and their members, developing clear plans for activities or determining roles and responsibilities directly. Moreover, youth activation programs, competency development, skills training such as communication training, leadership, how to deal with conflict, education about adolescents who care about health and initiating Program of Empower Youth Healthy without Smoking (EYHWS) "*Program Remaja Berdaya dan Sehat Tanpa Rokok*" (JayaStar).

5.4 Youth empowerment evaluation

The final stage of the community (youth) empowerment framework is to determine the impact of the program and evaluate community empowerment. Community empowerment can be a long and slow process, if the measurement is only focused on outcomes then the achievements cannot be seen during the relatively limited time frame. Some of the outcomes of community empowerment may not occur until the program time frame is complete. Thus, evaluating community empowerment in a program with a limited time frame is more appropriate when assessing changes during the process than with the outcome (Laverack and Labonte, 2000; Laverack, 2007). As a result, the process becomes an indicator of the results. For example, the empowerment outcomes of male smoking behaviors in Latin America were determined by themselves. Program success was not measured by the number of changes in smoking behavior but seen from the increase in the men's readiness to consider changes in smoking behavior. This is assessed by the way men and their families can control their apparent condition and the contribution of the health department to facilitate the process, including men's ability to determine the outcome of their projects and evaluate their achievements (Laverack and Labonte, 2000). Furthermore, the measurement of community empowerment as a process is done by monitoring the interaction between capacities, skills and resources of individuals or organizations during program implementation (Laverack, 2007).

The goal of empowerment is more likely to change the capacity and increase the power of the target. This is a learning process obtained from actions that propose a bottom-up or empowerment approach to health promotion. In the end, empowerment focuses on people's experiences, opinions and knowledge. It is a construct of individuals and local collective beliefs and truths. The more empowering program design namely uses participatory planning and evaluation (Laverack and Labonte, 2000).

The key point of increasing youth empowerment is the quality and natural youth participation in activities that contribute to empowering individuals, which will affect changes in individuals, groups, society and other desired outcomes. The quality of participation in groups is influenced by group structure and group climate. The empowerment of adolescents emphasizes psychological empowerment which is manifested

as a process through participation and can be measured in the outcome of individual change, namely involvement in group efforts (Holden *et al.*, 2005).

The results of the youth empowerment process can be seen through several indicators based on their levels, e.g.: the individual level and the group level (Holden *et al.*, 2004). At the individual level, adolescents actively participate in the planning and implementation stages of tobacco control activities with the state and community, known as psychological empowerment (Holden *et al.*, 2004, 2005; Woodall *et al.*, 2010). In the context of tobacco control, these changes occur as a result of youth participation in organizations. However, empowerment often occurs after adolescents make a personal commitment to be involved in organizational efforts in tobacco control. Specific characteristics that indicate the outcome of the empowerment process are changes in adolescent attitudes and beliefs (such as certain efficacy domains, attitudes towards socio-political control and participatory competence), specific knowledge such as knowledge of resource availability and skills as agents of social change such as assertiveness and advocacy. Another indicator of the success of the empowerment process at the individual level is a reduction in the desire to smoke (they think they will smoke or not in the future) and they express a desire to remain involved or not in the group (if they plan to remain involved in the group, it means there is success in maintaining members). On the other hand, a good relationship between the facilitator and participants includes aspects of culture, beliefs and critical awareness processes that will drive behavior change (Mohajer and Earnest, 2009).

Furthermore, there are group-level changes. There are several attributes or questions related to group-level changes that determine which groups are successful in achieving their goals and maintaining membership. These attributes include: activities have been made as planning, activities appear to be effective to achieve specific results, the group's ability to mobilize available resources in conducting activities, additional youth members have been maintained and individual members have been retained in groups and adolescents have a high level of satisfaction in participating in groups or not.

6. Discussion

This article presents a process for conceptualizing Youth Empowerment within the context of smoking prevention and control. In an attempt to enhance youth participation around smoking prevention programs, Empower Youth Healthy without Smoking (EYHWS) programs as a way to engage youths in this important issue by enabling their participation and leadership in these efforts. It was hoped that their involvement would achieve empowerment both of the individuals involved and of their groups and surrounding communities. With a variety of methods, including expert panel input, literature review, focus groups with youths and interview with stakeholders such as a leader of a community, we developed a conceptual framework for Youth Empowerment that is comprehensive in scope and logical in the application. We used this conceptual framework to guide the implementation of EYHWS program, development of our evaluation design and methods.

The model of youth empowerment to prevent and control smoking behavior adopted a comprehensive statewide tobacco control programs coordinate community-level interventions based on the Centers for disease Control and Prevention (CDC) "Best Practices for Comprehensive Tobacco Control Programs" and focus on: preventing initiation among youth and eliminating exposure to secondhand smoke (Centers for Disease Control and Prevention, 2014). Furthermore, this paper tries to apply the stages of community empowerment (Laverack, 2007) for the prevention and control of smoking behavior (Holden *et al.*, 2004) so that a youth empowerment model is proposed by the name of Empower Youth Healthy without Smoking (EYHWS) (in Appendix Figure 2).

Empowerment is a process in which there are activities to increase the empowerment domain, such as participation (Holden *et al.*, 2004; Laverack, 2007), local leadership, resource mobilization, capacity assessment problems, local leadership, organizational structure, resource mobilization, relationships with other parties, being critical, program management and relationships with outside agents (Laverack, 2007; Laverack and Labonte, 2000). Factors that influence the youth empowerment process are adolescent predisposing factors, adult involvement, group structure and group climate (Holden *et al.*, 2004). The previous finding that personal factors associated with an attitude of empowerment was characteristic of youth at lower risk of smoking (Dunn and Pirie, 2005). Activities that promote feelings of empowerment may not be the ones that offer the most opportunity for youth to be leaders. Direct involvement in implementing activities may be more important (Dunn and Pirie, 2005).

The indicator of empowerment is an increase in empowerment domains during the intervention that is conducted. This empowerment will have an impact on individual or group changes and community (Holden *et al.*, 2004). Furthermore, empowerment is linked to positive individual health indicators such as self-esteem, competence, motivation and self-efficacy (Marr-Lyon *et al.*, 2008); individuals self-efficacy, self-esteem, sense of community, sense of control and increases in individuals' knowledge and awareness (Woodall *et al.*, 2010); individual and communities empowered to research their condition are better positioned to effect positive changes for themselves (Holden *et al.*, 2004, 2005). For tobacco prevention, environmentally oriented, youth-led programs have been identified as particularly effective in engaging youth in tobacco control efforts (Hinnant *et al.*, 2004). Meanwhile, other researchers stated that social capital is an important mediator influencing the empowerment of adolescents; in this context, in tobacco control programs, the emphasis is on giving social responsibility to adolescents. Youth participation is the main indicator of empowerment. Then, social capital influences adolescents to participate collectively in tobacco control programs. Furthermore, this collective participation will encourage the creation of adolescents who are empowered in tobacco control programs. The output of youth empowerment is the intention to be involved, healthy values and behavior, positive experiences and community control and a culture of healthy living (Albert-Lőrincz *et al.*, 2019).

Participation in the program has a positive influence on adolescent beliefs, such as future orientation, group cohesiveness, personal size and group efficacy and perceptions (Wilson *et al.*, 2008). This condition will positively affect the proximal outcome of empowerment such as the willingness to use conflict resolution skills, and collaborative group decision making increased involvement in designing and implementing positive programs increased efficacy and participation in change. Furthermore, empowerment will have an impact on health and well-being with indicators of increasing awareness of risky behaviors, behaviors that improve health (Wilson *et al.*, 2008). Meanwhile, individual change in a society related to empowerment is known as individual community-related empowerment (ICRE), which consists of five dimensions, namely: self-efficacy, intention, participation, motivation and critical awareness (Kasmel and Tanggaard, 2011). Thus, ICRE is an indicator of the success of community empowerment at the individual level (Kasmel and Tanggaard, 2011).

The role of empowerment in most studies is an outcome and there was only one study that used a mediator. Empowerment indicators that involve groups or include individual competencies in groups were participation, social contact, social support and joint decision making. Individual and group indicators were related to the political dimension of empowerment produce advocacy and collective action where the main indicators are vision, reflection, problem-solving, critical awareness, leadership, resource mobilization or networks (Lindacher *et al.*, 2018).

The main principle of empowerment is participation and allowing the target to reflect on the quality of the measurements received the number of researchers collaborating with

members of the target group (youth community) during data collection design and data interpretation (Lindacher *et al.*, 2018). Empowerment evaluation still proves to be a challenge, so researchers need to use a variety of innovative and multilevel designs and methods. In the empowerment evaluation, a minimum standard of results should be made and it is important to achieve this without limiting the researcher's ability to respond to specific aspects of the context. It is recommended that further research includes participant preferences in the research study design, discussion and evaluation (Lindacher *et al.*, 2018).

7. Conclusion

Health promotion through youth empowerment to prevent and control smoking behavior starts from program design, planning, implementation and evaluation. The determinants of the youth empowerment process are adolescent predisposing factors, group structure, adult involvement and group climate. Indicators of the success of the empowerment process are reflected in the increase in the empowerment domain. Meanwhile, the output of the youth empowerment will have an impact on positive individual health indicators and the group-level changes. The framework outlined in this article is the first step to clarifying and understanding how youth empowerment goals can be systematically accommodated in health promotion programs. In addition, all of the domains presented here are the impact of group structure and climate, and the role of the adults involved is important to consider when developing local initiatives in youth and hopes to achieve both their growth as individuals and successful group efforts for all involved. Although this framework was designed to be sensitive to the context of smoking prevention and control, much of what is presented can be used as a guide in developing any local program efforts that involve youths.

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Appendix

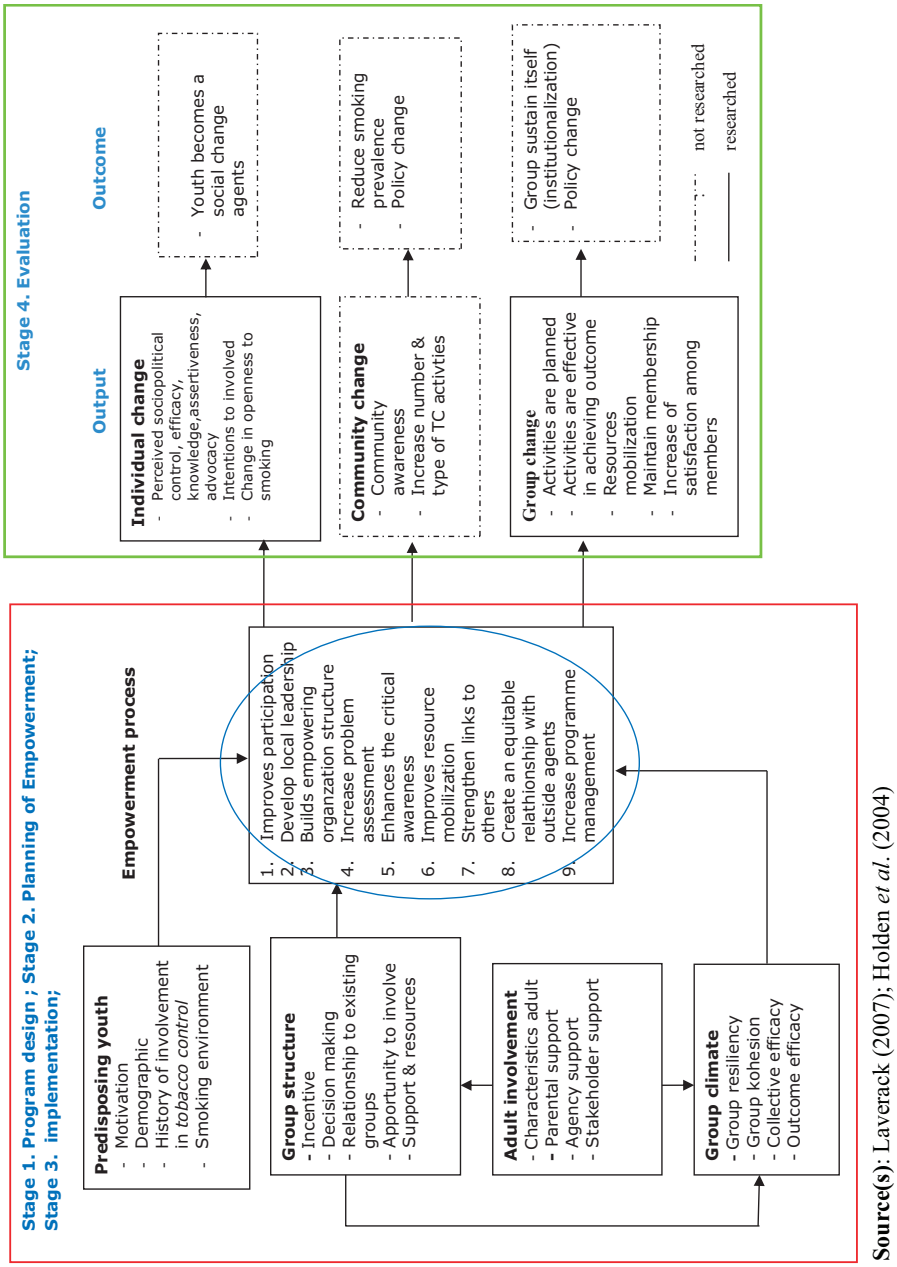

Figure 1.
Model of health promotion through youth empowerment in tobacco prevention and control

Source(s): Laverack (2007); Holden *et al.* (2004)

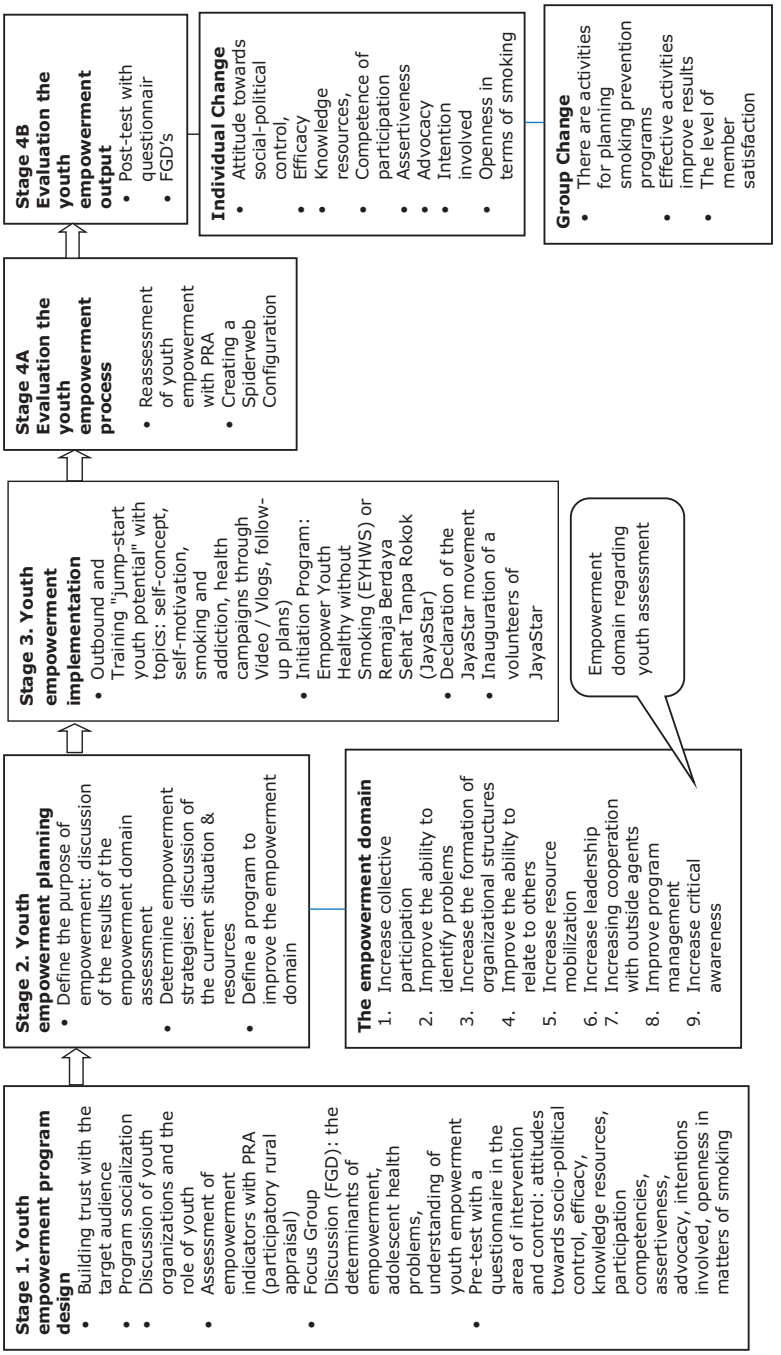

Figure 2.
Model of health promotion through youth empowerment to prevent smoking behavior

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Health promoting universities: effective leadership for health, well-being and sustainability

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Abstract

Purpose – This paper reports on a research study examining opportunities for and characteristics of effective leadership for whole university approaches to health, well-being and sustainability.

Design/methodology/approach – A multi-method qualitative approach was used: semi-structured interviews and focus groups were conducted with vice chancellors (n = 12) and UK Healthy Universities Network members (n = 10) and online questionnaires were completed by non-UK network coordinators (n = 6) and non-UK health promoting university coordinators (n = 10), supplemented with two interviews.

Findings – A total of two overarching themes emerged: opportunities to secure and sustain effective senior-level leadership and characteristics of effective senior-level leadership. Sub-themes under "Opportunities" included aligning work with core business so that health and well-being becomes a strategic priority, harnessing the personal qualities and values of senior-level advocates and using charters and policy drivers as levers to engage and catalyse action. Sub-themes under "Characteristics" included commitment to whole university/whole system working; an understanding that health underpins core business and is a strategic priority; enabling effective coordination through appropriate resourcing; balancing top-down and distributed leadership models and complementing strategic leadership with cultural change.

Originality/value – This study is one of the first to explore leadership in relation to health promoting universities. Drawing on the findings, it presents a guide to developing and securing effective leadership for health promoting universities – of value to researchers, practitioners and policymakers worldwide.

Keywords Healthy universities, Health promoting universities, Leadership, Whole system, Qualitative evaluation

Paper type Research paper

Introduction

This paper reports on an international research study examining opportunities for and characteristics of effective leadership for whole university approaches to health, well-being and sustainability. It is widely appreciated that student and staff health and well-being impact on the core business of higher education institutions (HEIs) and are fundamental to successful performance and productivity (Dooris *et al.*, 2020). There is also growing appreciation that human and planetary health are interconnected (World Health Organization, 2016) and that universities are important "place-shapers" – through civic and wider societal engagement (Goddard, 2009; UPP Foundation Civic University

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Commission, 2019). These discourses suggest that there is significant "added value" in connecting health, well-being and sustainability agendas (Orme and Dooris, 2010).

Higher education [1] is one key sector in which the healthy settings approach has been applied. Widely understood to have originated through the Ottawa Charter for Health Promotion, this approach is based on understanding that "health is created and lived by people within the settings of their everyday life; where they learn, work, play and love" (World Health Organization, 1986, p. 2). A conceptual framework for healthy settings has been proposed (Dooris, 2013), highlighting key characteristics: a salutogenic view concerned not only with illness but with well-being and what makes people flourish; an ecological model, appreciating that human health is determined by a complex interaction of personal, social, behavioural and environmental factors; a systems perspective, acknowledging interconnectedness and synergy between components within and between settings; a comprehensive holistic change focus, using multiple, interconnected interventions to embed health and an appreciation that most settings – including universities – do not have health as their main mission, making it essential to advocate for health in terms of impact on or outflow from core business.

As a movement, health promoting universities [2] first developed in the United Kingdom during the mid-1990s, catalysing activity at European and global levels (Suarez-Reyes and Van den Broucke, 2016). Since then, an increasing number of national and transnational networks have been established, seeking to implement a whole university/whole system approach to health, well-being and sustainability. Such an approach prioritises creating and sustaining a supportive culture and environment; embedding and joining up health and focussing on the whole population (Dooris *et al.*, 2020). This emerging global movement has, over the past few years, coalesced, guided by the vision and objectives of the Okanagan Charter for Health Promoting Universities and Colleges (2015), a major outcome of an international conference attended by 375 participants from 32 countries. This contends that "health promoting universities and colleges transform the health and sustainability of our current and future societies, strengthen communities and contribute to the wellbeing of people, places and the planet" (2015, p. 2) and calls upon HEIs to incorporate health and sustainability into their mission, vision and strategic plans and lead and drive change in society by modelling, testing and transferring innovative approaches.

Key to developing and sustaining health promoting universities, effective leadership embraces multiple important facets. Firstly, it must be context sensitive (Parkin, 2017). The context of higher education is rich, complex and diverse, with universities differing in size, structure, culture and mission. Operating within constantly shifting economic contexts and policy environments, their success is essentially multidimensional – spanning research, teaching, enterprise, civic engagement and internationalisation. Leadership needs to take account of these complex contextual factors and be constantly adaptive to them. Inevitably, developments emerging on strategic agendas tend to be those that either have strong external drivers and/or enhance performance and impact across a range of core business areas. Responding to complexity also points towards adaptive leadership, recognising that challenges "can only be addressed through changes in people's priorities, beliefs, habits and loyalties" (Heifetz *et al.*, 2009, p. 19) and that to ensure these changes are sustainable, a dialogic and shared approach is required (Fredricks *et al.*, 2020; Bolden *et al.*, 2015).

Secondly, effective leadership is inevitably influenced by both the personal qualities and values of individual leaders and the collective values of leadership teams: "by word, action, and example, values-based leaders seek to inspire and motivate, using their influence to pursue what matters most" (Jansen Kraemer, 2011, p. 2). In examining this, it is important to distinguish, and achieve balance, between doing and being. "Doing", or leadership as praxis, is concerned with what the leader does and what they prioritise. Reflecting on what life is like for a senior leader – fast-paced, priority-driven, mission-focussed and highly accountable – it becomes clear that cogent and persuasive reasons are needed for a new or emerging initiative to

gain time, attention and commitment. "Being", or ontological leadership, is a form of natural self-expression (Erhard *et al.*, 2012) and concerns the congruence between values, actions and behaviours and how this is modelled. Defined as "guiding others with the ultimate goal of improving their wellness" (Miller *et al.*, 2005, p.4), altruistic leadership approaches, as they might be termed, align strongly with the values inherent in health promoting universities, emphasising compassion, kindness, empathy, humility, emotional intelligence, authenticity and serving others. While leadership is often most visible through the characteristics of individuals, effective leadership can never rely on one person and requires commitment to sharing or distributing leadership. While, like many models, distributed leadership remains contested, it is generally understood to involve the sharing of influence by team members (Northouse, 2016, p. 365) with change agency flowing to points of need (Outram and Parkin, 2020) and the functions and processes of leadership being integrated across multiple roles, activities, relationships and systems (Bolden *et al.*, 2009). Likewise, shared leadership, "a dynamic, interactive, influence process" (Pearce and Conger, 2002, p. 1), captures poignantly the challenge of empowerment that lies at the heart of a holistic, whole system approach.

Thirdly, effective leadership involves leveraging strategic engagement through working with decision triggers at an organisational level (Cialdini, 1984). Parkin (2013) proposes four approaches for engaging senior leadership support for specific initiatives: demonstrating links and consistency with the institutional mission, values and strategic goals; making a "business case" based on contribution; illustrating sustainability in terms of meeting current and future needs and showing how institutional quality will be enhanced. The importance of moving leadership engagement from notional support to active commitment is vital if health, well-being and sustainability are to become fully integrated into universities' strategic plans and aspirations. When successful, strategic leverage achieves what might be termed an organisational mindshift, or a reappraisal of values, moving from "we cannot afford to. . ." to "we cannot afford not to. . .".

Aims and methods

This study critically explored leadership for the implementation of whole university approaches to health, well-being and sustainability, guided by the research questions: what are the characteristics of effective leadership for health promoting universities and what are the opportunities to secure and sustain this? It was informed by theoretical perspectives such as salutogenesis, systems thinking and socioecology (Dooris *et al.*, 2014) and catalysed by international developments (Okanagan International Charter for Health Promoting Universities and Colleges, 2015) and UK Healthy Universities Network members' concern about the challenges of securing senior-level leadership within a crowded higher education landscape.

As well as examining stakeholders' understandings of a whole university approach, as previously reported (Dooris *et al.*, 2020), it examined vice chancellors' and network members' perspectives on and experiences of leadership for health promoting universities and examined the potential of the Okanagan Charter and other national and international frameworks to catalyse whole university leadership and change. To ensure maximum utility, findings were used to formulate a guide for developing and securing effective leadership for health promoting universities.

The study used a multi-method qualitative approach to examine stakeholders' experiences, perspectives and understandings within the context of their organisations (Denzin and Lincoln, 2008), and ethical approval was obtained from the two collaborating universities. In total, 12 vice chancellors and ten health promoting university coordinators from a total of 19 UK universities participated in the data collection, alongside ten health promoting university coordinators and six network coordinators from overseas. Within the UK, focus groups and semi-structured interviews were conducted jointly by one male and one female researcher and were used to reveal both individual perceptions and perspectives

shaped by interaction (Wilkinson, 2011). Outside of the UK, the study used online questionnaires – comprising both "closed" (yes/no) and open (free text) questions – to access views from a geographically disparate sample (Wright, 2005), supplemented by two semi-structured telephone interviews, conducted. The questionnaires, focus group schedules and interview questions all explored perspectives on health promoting universities, leadership and the role of the Okanagan Charter. Data collection details are summarised below:

(1) One focus group with eight participants, all members of the UK Healthy Universities Network – facilitated by the two lead researchers (one male, one female).

(2) One focus group with ten vice chancellors from UK universities – facilitated by the two lead researchers (one male, one female).

(3) A total of two individual interviews with vice chancellors from UK universities – one conducted by each of the two lead researchers.

(4) In total, five individual interviews with health promoting university coordinators, three from the UK (one of whom was also in the focus group), one from Australia, one from Canada – each conducted by one of the two lead researchers.

(5) Questionnaire completed by ten health promoting university coordinators from Australia/New Zealand, South America and North America.

(6) Questionnaire completed by six health promoting university network coordinators from Australia/New Zealand, South America and North America.

Data generated by the focus groups and interviews were recorded and transcribed *verbatim*. Along with data from the questionnaires, these were subjected to two stages of thematic analysis (Braun and Clarke, 2006). Firstly, inductive analysis – "coding up" key themes emerging from the data by the secondary researcher. This was followed by deductive analysis – "coding down" by the lead researchers and cross-checking and further refinement to ensure that the final themes reflected the study's overarching research questions (Bowling, 2002; Hyde, 2008).

Findings

With regard to this paper's focus on leadership for health promoting universities, the research data are presented using two of the three overarching themes used to develop the guide shown in Figure 1 – the third, "Implementing a Whole University and Whole System Approach", being the focus of an earlier publication (Dooris *et al.*, 2020):

(1) Characteristics of effective senior-level leadership.

(2) Opportunities to secure and sustain effective senior-level leadership.

These are illustrated with quotes from the focus group and interviews with health promoting university coordinators (HU#FG; HU#IntX), the focus group and interviews with vice chancellors (VC#FG; VC#IntX) and questionnaires completed by non-UK networks and their members (NW#QuX; HU#QuX).

Characteristics of successful senior-level leadership

Vice chancellors and those involved in national networks identified a range of key features of successful leadership. Effective leaders were seen to have qualities linked to commitment and understanding, such that they could meaningfully articulate and advocate for health

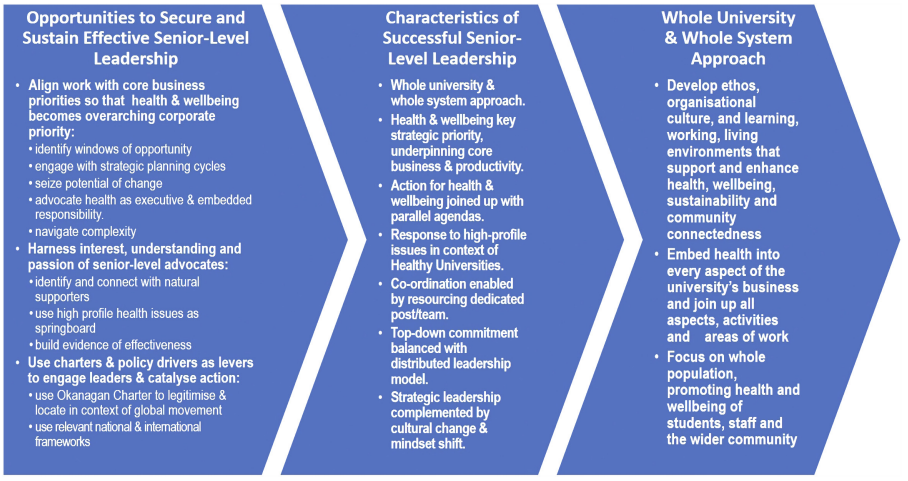

Figure 1.
Developing and securing effective leadership for health promoting universities

promoting universities as involving whole university and whole system approaches at senior executive level:

> In terms of whole university leadership, there are some qualities to that you need to think about. There's something about the sort of people that are doing that leading. And it's not about personality – it's about the character, the engagement, the emotional intelligence of those people, and their commitment to a health and wellbeing agenda and their understanding of it (HU#Int1).

Successful leadership was seen by many to involve integrating explicit commitment to health and well-being within corporate strategy, evidenced by some universities "naming" health as a high-level institutional priority and/or successfully incorporating their health promoting university commitment as a central driver within overarching documents guiding future planning and direction. Notably, these were institutions that had well-established initiatives and embraced a whole university approach:

> I kicked [the Healthy University] off as a strategic initiative in 2006/7. . . [and Health] will be one of the key themes that goes all the way through the University's 2030 strategy (VC#FG).

> We've now got to the level of buy-in where it looks like wellbeing will be part of our core University Strategy, one of the five big priority areas. So that's a kind of remarkable evolution. It had always been mentioned here and there in other strategic plans, but having something that's visible at that level. . .it's really influencing the whole University (HU#Int4).

Implicit in this approach was an understanding that health promoting universities embrace, but go beyond, effective service provision – and a belief that health and well-being underpin the core business of higher education, enhancing its productivity. This highlights the centrality of leadership for health and well-being connecting to key criteria such as student and staff experience, retention and performance and of "joining-up" with parallel agendas such as sustainability, equality, diversity and resilience. Linked to this, respondents from networks emphasised the importance of leaders responding to high-profile issues such as mental health proactively and within the context of the whole system health promoting universities framework. This emphasis flowed from concern that senior-level leaders tend to respond to such high-profile agendas reactively – and do not always appreciate connections

to the broader health promoting universities vision and can inadvertently undermine valuable whole institution work:

> I think the difficulty or the challenge would be, whilst our senior, very senior levels of staff see [mental health] as a priority, the challenge is not seeing it as part of a Healthy University idea (HU#FG).

Complementing strategic visibility, respondents highlighted investment in dedicated posts as another feature of senior-level commitment to enabling meaningful coordination and facilitating progress:

> The Pro Vice-Chancellor. . .supported the creation of a new, ongoing position in the University responsible for developing a University-wide Wellbeing Strategy and Action Plan. . .using population-based approaches and based on a holistic view of health and wellbeing (HU#Qu7).

Good leadership was also understood to involve balancing senior-level advocacy and commitment with a more "distributed" approach, involving wide-ranging engagement and participation. This was seen to be pivotal to success, securing ownership of multiple stakeholders and adding authenticity and credibility to the leadership process. At one university, this was implemented through consciously integrating health across the institution rather than focussing attention on a centralised team:

> A cross-unit, embedded model for staff has been an effective way of creating distributed leadership and breaking down silos. . .more than a dozen staff have health promotion or wellbeing as a prominent part of their job title or job description in six different units and across two campuses. . .This mix of perspectives, expertise and reporting builds resilience and buy-in (HU#Qu9).

As part of this approach, respondents emphasised the importance of senior-level leaders empowering those in the university community, linked to enhanced well-being:

> I think the more empowered you are, the more control you have over what you do – and there is an evidence base behind this – the healthier people are. . .and it is motivating and beneficial (VC#Int1).

One vice chancellor cautioned about over-reliance on "champions", who may lose energy and burn out. However, they also highlighted that good high-level leadership must draw on and be informed by motivated individuals able to advocate for health, sustainability and whole university change:

> You need "thorns in your side", you need people who repetitively say the same thing until it becomes common practice. . .wellbeing, Healthy University, environment, cycle paths, green areas. . .what do we mean by mental health? You need that constancy and repetition (VC#Int2).

While recognising the value of leaders formalising strategic commitment to health, vice chancellors also emphasised the need to facilitate cultural change. Examples given included broadened committee remits – for example, from "Health and Safety" to "Health, Safety and Wellbeing" – and a wider shift of mindsets:

> I'm more interested, perhaps, in the overall culture and the ethos of an organisation than I am in systems and structures. . . that concept of, you know, collective responsibility for people's health and wellbeing, of people feeling open and free, whereby they can share their concerns. . .ensuring from my side that is properly resourced, that there's a no blame culture (VC#FG).

Concerned to achieve such cultural change within the whole institution, one vice chancellor had used his leadership to embed a set of underpinning values and encourage a shift from instrumental to compassionate and relational management, expressing a belief that effective engagement and transformation requires moving beyond mechanistic models of change.

Similarly, another raised the question of how leadership for health promoting universities can be holistic and help bring people together and provide a common sense of purpose:

> What part does the [Healthy Universities] agenda have to play in creating a sense of one University, single University, rather than silos and boundaries? (VC#Int1)

Opportunities to secure and sustain effective senior-level leadership

With regard to the process of securing and sustaining effective senior-level leadership for health promoting universities, a number of opportunities and influencing factors were identified, which could be grouped under three organising themes.

The first concerned the importance of aligning health promoting universities work with core business priorities so that health and well-being becomes a corporate priority, underpinning and supporting other strategic goals:

> Linking the benefits of wellbeing and health-promotion to the institution's strategic goals. For instance, showing research and evidence that resources spent on wellbeing initiatives pay big dividends in terms of student retention, and staff productivity (HU#Qu3).

Respondents acknowledged that moving health and well-being higher up the list of long-term strategic priorities, so that it becomes aligned with and is seen to underpin core business, can be extremely challenging:

> You need to have a number of. . .leaders willing to buy into the principles for health and wellbeing and not just look at the short-term financial investment. You also need to make sure that it is elevated to a top 3–5 priority. . . (HU#Qu9).

One means of overcoming this challenge was finding appropriate windows of opportunity and using these as entry points to catalyse conversations and put health promoting universities on the agenda of senior leaders – where appropriate forging connections between agendas:

> [Healthy Universities] is place-based, every context is different and every community is different. You have to go where the momentum and the strengths and the energy are. But if you're intent on having conversations and reaching out to people who are supportive. . .I find that you can pick up steam and bring people in from some surprising corners (HU#Int4).

Strongly linked to this, engagement with universities' planning cycles was understood to be key, with respondents highlighting the importance of finding opportunities to integrate the health promoting university perspective within corporate strategy:

> We've already been asked by our vice-chancellor to think through how the Healthy University could be embedded within our 2020–2025 University Strategy. It's an amazing opportunity and challenge! (HU#FG)

While organisational change was viewed negatively by some – with reconfigurations and senior-level staff turnover representing barriers to progressing health promoting universities and requiring "yet another" awareness-raising process – others were more enthusiastic, emphasising opportunities offered by restructuring and the need to seize the potential offered by transitions. There was also recognition that success in elevating health promoting universities, so that it is viewed as strategically important to mainstream business, requires a "push" for health and well-being to be both "named" as a senior executive-level responsibility and embedded within multiple roles.

> We've recently had some shift in our Vice-Chancellor's Executive Group, with some new senior people. Now one of those is going to be a Pro Vice-Chancellor, who's going to have a specific responsibility within their portfolio. . .[for] sport and corporate health and wellbeing (HU#Int2).

> It does need to be a distributed leadership, but somebody needs to pull it together, otherwise it's a fragmented leadership (VC#Int1).

Alongside this, it was widely acknowledged that universities are large and complex organisations and that navigating this complexity must be a priority if health promoting universities work is to be successfully aligned with core business priorities. This highlighted the value of cross-university structures and ways of working:

> Because [the University's] structure is siloed, it actually prohibits people from going outside their service, from making partnerships. . .So they're very reliant on the Healthy University Group to be that place where they make the links. So that's why a Healthy University Group, having that oversight and having that reach across the whole University, that's why it's important (HU#Int1).

The second organising theme concerned harnessing the interest, understanding and passion of senior-level advocates, with both network members and vice chancellors citing the professional background of high-level leaders as a key driver:

> So it's a personal interest, because my background's health, and public health in particular was the way in which I was coming in at it. . .What could I do that was different from what any other Vice-Chancellor? So it was a bit of "this is my platform, this is my flag". And at the time, the University needed a bit of healing and not too much bruising (VC#FG).

> It's partly about the Vice-Chancellor and his background [in health] and understanding, which has helped a lot. Without our current VC as our champion. . .[the Healthy University] would not have been embedded as part of the University Strategy (HU#Int1).

Closely linked to this, the value of identifying and connecting with natural allies and supporters was highlighted, pointing to the need to invest time in networking and forging relationships across the institution. However, people commented that the wide-ranging focus of health promoting universities made it challenging to know who was best-placed to be the lead champion or sponsor:

> Just by the nature of the work we do, it does not easily fit with one [senior leadership role]. . .it's how you choose and that can shift. . .because the work is so wide ranging that you can literally sit there and go, "actually, I would argue, it almost fits with everybody". That makes things very difficult to manage! (HU#FG)

Respondents pointed to the value of using high-profile agendas to lever senior-level engagement in health promoting universities. They were overwhelmingly positive about the prominence given to particular health challenges, notably student mental health via Universities UK's Stepchange Framework (Universities UK, 2020). However, while recognising these as important entry points, they had also experienced challenges – expressing concern about a lack of coordination and integration:

> I think there is buy-in, in terms of addressing current agendas and policy that's coming in to direct the University, for example, mental health. . .[but] I do not think it's anything to do with recognising the ideology of a Healthy University (HU#FG).

> A number of networks have recently been established (e.g. substance use, best practices in mental health). If efforts are not coordinated, there is potential for all network activities to be weakened (NW#Qu4).

More widely, there was consensus that persuasive evidence of effectiveness is important as a driver for harnessing the commitment of senior-level leaders to prioritise health promoting universities, through using evaluation to make the case for investing in health and well-being alongside sustainability, diversity and inclusion and, where appropriate, indigenous engagement. However, while network members held a strong belief that key indicators

such as retention and achievement are influenced by health and well-being, they also emphasised the challenge of measuring this quantitatively and thereby gaining leaders' buy-in. Vice chancellors highlighted the importance of an evidence base to move the health promoting university beyond the stage of strategic commitment and guide action that will deliver better outcomes for students and staff:

> The difficulty is knowing what to do actually. It's not recognising the importance of the issue, it's knowing how to gain traction with it. . .And it comes back to. . .tying it in to the objectives of the University in an evidential way, so it's very clear that this is what we ought to be doing, rather than just a sense of "it feels like the right thing to do" (VC#Int1).

A particular challenge was to go beyond evaluating the delivery of specific services to capture the added value of a whole university approach in both quantitative and qualitative terms:

> We have not ever had the capacity to measure the whole impact. I do not know if anybody has, I think it's just one of the difficult areas to do. And even how we would do that. . . (HU#Int3).

The third organising theme concerned the use of external charters and policy drivers to engage leaders and catalyse action. A wide-reaching focus was the Okanagan International Charter for Health Promoting Universities and Colleges, which was understood to be not only inspirational but also extremely valuable as a mechanism to legitimise health promoting universities work and locate this in the context of a global movement:

> It has a strong and compelling vision. It has a global scope (HU#Qu3).

> We've used it to try to persuade at a very senior level. . .that there is an international structure with a very clear framework of how your organisation can become a Healthy University, and the steps that you need to take to do that (HU#FG).

While not necessarily utilising it as an overarching guiding framework, those involved in networks highlighted strong resonance with its principles and content, particularly the two calls to action – embedding health in all aspects of campus culture and leading health promotion action and collaboration locally. There was, though, some caution about the Charter's overall utility, with respondents highlighting the need to close the "implementation gap" through translating high-level commitments into practical culturally and contextually appropriate actions:

> The Okanagan Charter is a useful framework but local feedback suggests that a gap exists about more practical steps and staging for achieving the calls to action (NW#Qu1).

> I think the challenge. . .is getting buy-in to implement it because the question from a lot of senior people is "this is a really nice document but how do I actually go about implementing it?". . .So I think it's challenging for them to apply it in their own institution (HU#Qu5).

While one respondent suggested that the Charter could be used to develop an international "rating" scheme, many others focussed on the challenge of engaging their leaders, pointing to the need to increase awareness and understanding and persuade them of the tangible benefits of engaging with and implementing the Charter. This challenge was illustrated by UK vice chancellors, who were largely unaware of the Charter or viewed it as just one of many documents that contribute ideas and feed into decision-making processes. They also expressed some concern about its status in terms of its seeming lack of "ownership" by any one international body and its language:

> I'm sure any framework that brings things together like this is helpful. . .It's great, lovely, but who owns this?. . .I've got lots of frameworks I have to implement as well. So how can I mesh it together

> with what I've already got institutionally, and to best effect, and where can I look to connect with good practice that I might use? (VC#FG)

Most national networks had built commitment to the Okanagan Charter into their membership structure, linked to an opportunity or requirement for vice chancellors to act as signatories:

> We have also asked our members to present the Charter and ask senior leadership to "sign on" to the principles of the Charter (NW#Qu3).

Within the UK, network members endorsed the network's introduction of new membership criteria incorporating an explicit commitment to the Okanagan Charter and an option for senior-level executive sign up, viewing this as an important signifier that in committing to adopting health promoting universities, an HEI is part of a global movement:

> It's not just someone whose thought up of an idea, it's actually part of a bigger movement. . .having [the Okanagan Charter] as part of [the Network's membership process] is definitely beneficial because it brings awareness. . .it's not just a little project that someone's doing (HU#FG).

In addition to discussing the Okanagan Charter, vice chancellors and network members made connections to relevant external strategies and frameworks as potentially useful drivers in securing leadership and action. At an international level, these included the United Nation's Sustainable Development Goals, with which the Okanagan Charter was seen to be closely aligned:

> [The Okanagan Charter] is a useful catalyst for the development of the initiative of health promoting Universities, bearing in mind that we are immersed in meeting the Sustainable Development Goals, so it is necessary to meet them to have healthy populations (NW#Qu6).

Within the UK, alongside mention of workplace health charters, the Well-being of Future Generations Act (Wales) was highlighted. This likewise aligns closely with the Okanagan Charter's focus on health and sustainability and the well-being of people, place and planet:

> In Wales, with sustainable development being embedded within the constitution and the Wellbeing of Future Generations Act being enacted, that's been our focus, as it were, in ensuring that our Healthy University Strategy aligns to that. . .Actually, the principles are the same as the Okanagan Charter. . .It's something that we refer to but it's not the driver for what we're doing (HU#Int2).

Discussion

This research explored the views of both UK vice chancellors and those involved in UK and non-UK health promoting universities networks, with a view to producing recommendations, a set of illustrative institutional case studies and a guide to securing and sustaining effective senior-level leadership for health promoting universities. The scope of the study was limited – in part due to resource constraints restricting the amount of data collection, in part due to the challenges involved in accessing and engaging vice chancellors and in part due to the lack of established networks in Africa and Asia at the time the research was conducted. However, the study generated a wealth of informative data and the analysis revealed valuable perspectives relating to leadership for health promoting universities.

As Figure 1 shows, members of health promoting universities networks identified multiple influencing factors and opportunities to secure, sustain and strengthen senior-level leadership. With reference to aligning work with core business so that health and well-being becomes a strategic priority (Parkin, 2013), these included finding appropriate entry points and windows of opportunity for agenda-setting; engaging with strategic planning cycles; utilising the potential offered by organisational change; advocating for health to be both

named as a responsibility within a senior leader's role and embedded in multiple roles across the university and learning to navigate the large-scale and complex nature of universities. In relation to harnessing the personal qualities and values of senior-level advocates (Jansen Kraemer, 2011) – their interest, understanding and passion – the following sub-themes emerged: identifying and engaging with your natural allies; using high-profile concerns as catalysts and levers and generating a persuasive evidence base. With regard to using charters and policy drivers as levers to engage and catalyse action, attention was focussed on both the Okanagan Charter for Health Promoting Universities and Colleges (2015) and other international and national frameworks such as the Sustainable Development Goals (United Nations, 2015) and Well-being of Future Generations Act (Wales) (2015). In discussing the Okanagan Charter, members of both UK and other national networks highlighted its inspirational nature and the significance of its international status in engaging senior-level buy-in. Although many health promoting university initiatives were not using it as an overarching framework, its principles and calls to action were widely valued – although the challenge of moving from commitment to effective implementation was also emphasised. While some universities outside of the UK had secured high-level adoption of the Charter or discussed how the Charter could be used as an international rankings-related driver, UK vice chancellors were largely unaware of it or viewed it as just one of many external documents to draw upon. However, most national networks had built commitment to the Okanagan Charter into their membership structure, linked to an opportunity or requirement for vice chancellors to act as signatories – an approach broadly welcomed in the UK.

Effective, authentic and credible senior-level leadership was understood to be a prerequisite for the successful implementation of a health promoting university initiative. As illustrated in Figure 1, such leadership was seen to involve commitment to whole university/whole system working, as explored by Dooris *et al.* (2020), coupled with an understanding that health and well-being underpins core university business and must therefore be a properly resourced strategic priority. The importance of knitting together agendas in a positive way is seen as key to this, with effective leadership involving a recognition that more can be achieved by connecting health with parallel agendas such as sustainability, resilience, equality and diversity – and by taking a proactive, integrated and even sometimes "opportunistic" approach to high-profile concerns such as student mental well-being. The processes involved – of connecting, aligning and finding windows of opportunity to achieve influence and strategic leverage through incorporating health, well-being and sustainability into high-level organisational planning cycles – are all ultimately about emphasising and making the case for interdependence. This in turn spotlights the necessity of collaborative leadership (Archer and Cameron, 2013), which is premised on the belief that when people are brought together with access to high-quality information, they are able to work together authentically to generate the vision and strategies necessary to tackle shared concerns (Chrislip and Larson, 1994). Alongside this, the data emphasised a commitment to wrestling with the challenges of implementing shared and distributed leadership (Pearce and Conger, 2002; Bolden *et al.*, 2009), in ways that secure widespread ownership and empowerment. As one of the respondents observed, distributed leadership must not mean fragmented leadership, and there is an artful balance to be struck between central coordination and oversight with devolved approaches that look to foster collective engagement at multiple levels.

These findings, and the support for collaborative and distributed approaches, relate strongly to boundary-spanning leadership. This highlights the value of breaking out of silos and appreciates that boundaries tend to be places where innovation and new types of collaboration emerge. Defined as "the capability to establish direction, alignment, and commitment across boundaries in service of a higher vision or goal" (Yip *et al.*, 2011, p. 4), this approach is based on three priorities: collaboration across functions; empowerment of

employees at all levels and cross-organisational learning. From this perspective, it is noteworthy that traditional notions of leader influence linked to positional authority and structural hierarchies are of limited effectiveness for agendas that do not provide a direct "easy-to-measure" organisational return and which call for boundary-spanning collaboration (ibid.). A dual operating system has been proposed (Kotter, 2014), which addresses the limitations of hierarchies by setting alongside them an emphasis on dynamic, energetic, adaptive networking systems. These free-up the hierarchy by empowering individuals to create and participate in spheres of influence that work across siloed lines of reporting to achieve impact in a more immediate and flexible way: "the new system adds needed agility and speed while the old one, which keeps running, provides reliability and efficiency" (ibid.: viii). This approach has been advocated for the parallel agenda of environmental sustainability, using what has been termed the "Core Business Integration of Sustainability" (Sharp, 2015). To generate the energy and interest needed for a networked sphere of influence to have impact, an appreciative approach to change (Lewis *et al.*, 2015) is important – identifying, celebrating and building positively upon good practices already in place.

As well as resonating with altruistic leadership approaches (Miller *et al.*, 2005), which, as discussed in the introduction, align with the values base of health promoting universities, the findings emphasised that effective leadership must combine high-level commitment and strategic intent with transformational change linked to cultural investment. Strategic intent brings together three considerations. First, a profound understanding of organisational purpose, the definition of which, according to Bartlett and Ghoshal (1994), must be the first responsibility of senior management. Second, and informed by this clarity of purpose, a focus on the future and the hard work of "choice" involved in developing and implementing the strategy needed to get there (Rumelt, 2012). Third, an articulation of the values that drive how organisational communities live and work together. Lencioni (2002) distinguishes between core values – embedded principles guiding action and serving as cultural cornerstones and aspirational values, which an organisation needs to succeed but currently lacks. The health promoting university offers significant potential to bridge between core and aspirational values, bringing key agendas such as student mental health and climate emergency commitments into the central dialogue of organisational strategy. More generally, to become genuinely and sustainably integrated within an institution's strategy, the health promoting university must resonate with all three aspects of strategic intent. This points to another aspect of strategic leadership – sense-making and finding meaning through dialogue, social exchange and collaborative engagement (Drath and Palus, 1994). This focus is about the leader's ability to find connections and navigate the complexity of competing policy agendas. As informed and influential practitioners, health promoting university coordinators can assist in this process, presenting a coherent way forward which is strategically valuable to those in decision-making roles.

Linking closely with organisational values, cultural investment highlights questions of individual and collective influence. As Figure 1 illustrates, whole university and whole system approaches involve developing the ethos and organisational culture of the institution, and this needs to be done in ways that connect not only with organisational purpose but also with place – focussing on civic engagement with the wider community in which the institution operates and resides. Sometimes referred to as "the forgotten half of change" (De Brabandere, 2005), transforming organisational culture and cultural perceptions is the true essence of sustainable strategic change. Behind this lies a powerful congruence between an organisation's espoused values and the lived experience of the institutional community: "successful organisations tend to be those which possess assumptions and values which encourage behaviours consonant with the organisational strategy" (Hassard and Sharifi, 1989, as adapted and cited in Brown, 1998, p. 163). This is likely to require moving to more

relational approaches to leadership, developing collective commitment through collaborative and transparent processes. As Parkin (2017, p. 114) observes, "it is important for leaders to be aware that there is a clear relationship between engagement, commitment and accountability".

Conclusion

This international research study engaged with multiple stakeholders to examine leadership for health, well-being and sustainability within the higher education sector. As reported above, key opportunities for securing effective leadership included alignment with core business such that the health is understood to underpin corporate priorities and strategic intent; harnessing the passion and drive of allies and champions and using charters and policy drivers to engage and lever action. Key characteristics of such leadership included adoption and resourcing of a whole university/whole system approach; combining strategic direction with cultural investment for change; joining up across agendas and boundaries and balancing top-down commitment with distributed/shared approaches. As discussed above, the findings resonated with a number of approaches, including altruistic, collaborative and boundary-spanning leadership – reflecting values inherent in health promoting universities.

At the time of writing, universities worldwide have been impacted profoundly by coronavirus disease 2019 (COVID-19). The pandemic has been hugely disruptive but also offers potential to be transformative. Reflecting on the disruption within higher education, Blonkers (2020) suggests that, beyond phases focussed on immediate response and short-term recovery, we need to re-imagine the business of higher education in the post-pandemic world. As universities plan ahead, there are a range of concerns to take into account and balance: using space and place in ways that preserve social distancing whilst enabling academic and non-curricular interaction (Parkin and Brown, 2020); offering blended learning that preserves a high-quality student experience; reconfiguring student accommodation options; enabling a sense of belonging and community within the "new normal" of life on- and off-campus; anticipating and responding to the long-term mental health impacts of COVID-19 and prioritising actual and perceived safety alongside the wider health and well-being of students and staff and the civic role of the university in its community. Alongside these considerations, prompted largely by the threats arising from COVID-19, there is a wider discourse about the opportunities that the pandemic has opened up. In planning for long-term recovery, there is clearly potential for transformational change: do we go back to the "old normal" or do we imagine and commit to a new and different future? The disruption caused by COVID-19 has provided glimpses of what is possible both within and outside of higher education. For example, universities worldwide have experienced vastly reduced energy use on-campus through the reduced use of buildings and other facilities; a marked decrease in commuting and business travel, with health and sustainability benefits and a realisation that learning, teaching and other forms of university business can, at least to some extent, take place effectively using online communication platforms. While the pandemic has shone a spotlight on societal and global injustice and inequalities, there have been powerful insights into what a healthier and more sustainable future could look like: reduced air pollution and carbon emissions; increased uptake of cycling and walking as forms of both commuting and leisure travel; re-evaluation of life/work balance and discovery of the benefits of a fundamental reconnection with nature.

All of this points to the opportunity for higher education to use the disruptive impact of COVID-19 as a catalyst to "build back better" – harnessing its leadership to effect visionary change both within universities and in society as a whole. This task will require leadership that values well-being, prioritises whole university/whole system approaches and combines inspirational, transformative, collaborative and boundary-spanning perspectives. In this

regard, the Okanagan Charter for Health Promoting Universities and Colleges (2015) captures the enormity of this ambition – calling on HEIs not only to incorporate health and sustainability into their mission and strategic plans but also to lead and drive transformative change in current and future societies, thereby contributing to the well-being of people, places and the planet.

Notes

1. The term "higher education" is used generally to refer to post-secondary education. The Okanagan Charter for Health Promoting Universities and Colleges (2015) takes as its remit universities, colleges and other organisations that make up the post-secondary sector. However, it is important to note that different countries have different education systems: in the UK, for example, "further education" refers to study after secondary education that is not taken as part of an undergraduate or postgraduate degree. For the purposes of this study, participants were recruited primarily via existing networks, respecting their varying inclusion criteria.
2. The terms "health promoting university", "healthy university" and "healthy campus" tend to be used in different countries and contexts to mean much the same thing, even though it can be argued that there are semantic differences between them (e.g. Dooris, 2006), the reality is that they have often been used interchangeably. For the purposes of consistency, "health promoting university" is used throughout this paper except in relation to the UK Healthy Universities Network and when other terms are used in quotations.

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Teachers' self-efficacy beliefs in teaching food and nutrition subjects in Australian secondary schools

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Abstract

Purpose – Teachers play important roles in school food and nutrition education. This study aims to explore Australian teachers' self-efficacy beliefs (i.e. belief in their own capabilities to perform specific teaching tasks) in teaching secondary school food and nutrition-related subjects.

Design/methodology/approach – Teachers' overall self-efficacy beliefs in teaching these subjects (overall-SEB) and self-efficacy beliefs in teaching different food and nutrition-related topics (topics-SEB) were explored using a survey among 183 teachers in 2017. Principal components analysis derived three overall-SEB components: "Motivation and accommodation of individual differences", "Classroom management" and "Communication and clarification" and three topics-SEB components: "Food system", "Food and nutrition information" and "Food preparation".

Findings – Overall, higher percentages of teachers were confident or very confident in the majority of items that loaded on "Classroom management" and "Communication and clarification" compared to "Motivation and accommodation of individual differences". Moreover, higher percentages of teachers were confident or very confident about items that loaded on "Food and nutrition information" and "Food preparation" compared" to "Food system". The overall-SEB and topics-SEB were higher among more experienced teachers. There were moderate positive correlations between overall-SEB and topics-SEB components.

Originality/value – The exploration of broader aspects of self-efficacy beliefs related to teaching secondary school food and nutrition-related subjects makes this study unique. The findings highlight that these teachers had high self-efficacy beliefs in teaching food and nutrition education, but there are gaps in tailoring the teaching process to meet the diverse needs of students and teaching broader food-related topics.

Keywords Self-efficacy beliefs, Food and nutrition education, Teachers, Secondary school

Paper type Research paper

Introduction

Schools have been identified as key areas for health promotion and food and nutrition education (De Bourdeaudhuij *et al.*, 2011; Langford *et al.*, 2015; Murimi *et al.*, 2008; Perez-Rodrigo and Aranceta, 2001). Across the world, the increasing prevalence of diet-related diseases and associated poor dietary patterns have initiated discussions about the importance of school food and nutrition education (Lichtenstein and Ludwig, 2010; Pendergast and Dewhurst, 2012; Slater, 2013). Other food system-related problems such as global hunger, micronutrient deficiencies, food insecurities and environmental degradation

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Conflict of interest: The authors declare no conflict of interest.

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further add to the need for a broader form of nutrition education (i.e. food literacy education) (Bellotti, 2017).

Teachers play essential roles in the successful execution of school food and nutrition education (Hall *et al.*, 2016; Jørgensen *et al.*, 2014). Their self-efficacy beliefs about teaching food and nutrition subjects are important factors that determine how successfully they engage in teaching these subjects (Britten and Lai, 1998; Caprara *et al.*, 2006). Dellinger and colleagues defined teachers' self-efficacy beliefs as "a teacher's individual beliefs in their capabilities to perform specific teaching tasks at a specified level of quality in a specified situation" (Dellinger *et al.*, 2008). Teachers' self-efficacy beliefs for teaching food and nutrition have positive associations with time spent in teaching (Brenowitz and Tuttle, 2003; Britten and Lai, 1998) and the implementation of food and nutrition subjects (Diker *et al.*, 2013; Fahlman *et al.*, 2011). Teachers' food and nutrition knowledge and their qualifications (Murimi *et al.*, 2008), professional development opportunities and resources have been identified as the key contributors for the development of higher self-efficacy beliefs (Diker *et al.*, 2013; Fahlman *et al.*, 2013; Stage *et al.*, 2016).

Recently in Australia, Ronto and colleagues explored secondary school teachers' self-efficacy beliefs about food literacy such as their confidence in food planning and preparation and food safety and found that they were highly confident about their knowledge and skills in these areas (Ronto *et al.*, 2016). Previously, the present authors explored teachers' confidence in teaching a new food literacy curriculum: The Victorian Certificate of Education (VCE) Food Studies, which is offered only in senior secondary school level (years 11 and 12) in Victoria, Australia. We found that teachers were confident in teaching some aspects of the curriculum such as food planning and food choice-related topics, but not other areas such as the historical or environmental aspects of food (Nanayakkara, 2018). However, according to the best of our knowledge, no studies have examined broader aspects of teachers' self-efficacy beliefs (i.e. motivating and engaging students, providing feedback, improving students' performances, classroom management, developing higher-order skills) related to teaching food and nutrition subjects across the junior, middle and senior secondary school levels in Australia. Accordingly, this study aimed to examine teachers' overall self-efficacy beliefs in teaching secondary school food and nutrition subjects (referred to hereinafter as overall-SEB) and their self-efficacy beliefs in teaching specific food and nutrition-related topics (referred to hereinafter as topics-SEB). Furthermore, it aimed to examine the differences in self-efficacy beliefs based on the teaching experience and school characteristics and to explore the relationships between overall-SEB and topics-SEB.

Methods

Design and sampling

Teachers who were teaching food, nutrition and health-related subjects in secondary schools in Australia were the target group for this study. An online cross-sectional survey was employed to explore their opinions of self-efficacy beliefs in teaching food and nutrition subjects.

Survey instrument and administration of the survey

The sections of the questionnaire relevant to this paper are presented below.

Self-efficacy beliefs in teaching food and nutrition subjects (overall-SEB) – The teacher efficacy beliefs systems-self (TEBS-Self) instrument developed by Dellinger and colleagues (Dellinger *et al.*, 2008) was included in this section. It was designed to assess teachers' self-efficacy beliefs about the general tasks that are associated with their classroom teaching and learning and can be adjusted to reflect the specific teaching tasks in different countries,

curriculum groups, etc. (Dellinger *et al.*, 2008). TEBS-Self consists of 31 items with four-point rating scales. The sentence structure of the items and the names of the rating scale were modified from the original American version to make the TEBS-Self more suitable for the Australian food and nutrition teachers. For example; "Right now in my present teaching situation, the strength of my personal beliefs in my capabilities to plan activities that accommodate the range of individual differences among my students" with a rating scale: 1 = weak beliefs in my capabilities, 2 = moderate beliefs in my capabilities, 3 = strong beliefs in my capabilities, 4 = very strong beliefs in my capabilities, was modified as "How confident are you that you can plan activities that accommodate the range of individual differences among the students?" with a rating scale: 1 = not at all confident, 2 = moderately confident, 3 = confident, 4 = very confident. All the items are shown in Table 2. Teachers were asked to respond to these 31 items considering their self-efficacy beliefs in teaching food and nutrition-related subjects.

Self-efficacy beliefs in teaching specific food and nutrition topics (topics-SEB) – The teachers were asked "How confident are you that you can do a good job of teaching students the following topics of the food and nutrition-related subjects?" Then, followed a list of 23 topics drawn from secondary school food and nutrition subjects taught in Australian schools (Australian Curriculum Assessment and Reporting Authority, 2015; Victorian Curriculum and Assessment Authority, 2016, 2017). The same, four-category rating scale, was used (not at all confident (coded as 1), moderately confident (coded as 2), confident (coded as 3), very confident (coded as 4)).

Teachers' professional and demographic characteristics – The teachers were asked closed-ended questions about their professional and demographic characteristics. These included number of years of experience in teaching food, nutrition or health subjects in secondary school (pre-service teacher, 1–3, 4–10, 11–15, 16–20 and more than 20 years, which was later coded as ≤20 years, >20 years), type of the school they currently taught in (government, independent, catholic), location of the school (metropolitan area, regional area, rural area), their age (18–24 years, 25–39 years, 40–60 years, 60 years plus) and sex (male, female, other, prefer not to say).

Characteristics	*n*	%
Gender		
Female	178	97
Male	5	3
Age		
18–24 years	2	1
25–39 years	27	15
40–60 years	131	72
>60 years	23	13
Experience teaching food, nutrition and health-related subjects		
≤20 years	92	50
>20 years	91	50
Type of the school currently teaching in		
Government	107	58
Independent	42	23
Catholic	30	16
Other	4	2
Location of current school		
Metropolitan area (capital city)	99	54
Regional area (including major towns)	65	36
Rural area (including small country towns)	19	10

Table 1. Teachers' demographic and professional background

Items	Factor loading	Confident or very confident (%)
Component 1: motivation and accommodation of individual differences (Cronbach alpha = 0.95)		
Can plan activities that accommodate the range of individual differences among the students	0.76	78
Can utilise teaching–learning resources that accommodate individual differences among the students	0.74	77
Can provide a learning environment that accommodates students with special learning needs	0.74	77
Can provide students with opportunities to learn at more than one cognitive and/or performance level	0.71	74
Can improve the academic performance of students, including those with learning difficulties	0.65	71
Can implement teaching activities at an appropriate pace to accommodate differences among students	0.66	78
Can actively involve students in developing concepts	0.64	82
Can motivate students to perform to their fullest potential	0.64	78
Can adjust teaching and learning activities as needed	0.62	90
Can plan evaluation procedures that accommodate individual differences among students	0.61	77
Can resolve student misunderstandings or difficulties in learning	0.58	82
Maintain a classroom environment in which students work cooperatively	0.57	90
Can involve students in developing higher-order thinking skills	0.54	81
Component 2: classroom management (Cronbach alpha = 0.94)		
Can maintain a classroom climate of courtesy and respect	0.82	90
Can manage student discipline/behaviour	0.74	86
Can redirect students who are persistently off task	0.74	78
Can maintain a classroom climate that is fair and impartial	0.72	93
Can effectively manage routines and procedures for learning tasks	0.69	92
Can maintain high levels of student engagement in learning tasks	0.69	82
Can successfully maintain a positive classroom climate	0.66	92
Can clarify directions for learning routines	0.64	92
Can use allocated time for activities that maximise learning	0.54	80
Can provide a positive influence on the academic development of students	0.52	87
Can communicate to students the content knowledge that is accurate and logical	0.51	92
Component 3: communication and clarification (Cronbach alpha = 0.92)		
Can provide students with suggestions for improving learning	0.80	89
Can provide students with specific feedback about their learning	0.77	87
Can solicit a variety of questions throughout the lesson that enable higher-order thinking	0.62	76
Can actively involve students in critical analysis and/or problem-solving	0.60	77
Can communicate to students the purpose and/or importance of learning tasks	0.60	92
Can communicate to students the specific learning intentions of the lesson	0.59	89
Can monitor students' involvement during learning tasks	0.49	88

Table 2.
Three overall-SEB components – the factor loadings of each of the items and the percentages of teachers who were confident or very confident with the items

A senior home economics teacher reviewed the questionnaire and suggested some modifications to the sentence structure and rating scales (as noted above) to make the questionnaire more suitable for Australian teachers. Then, the questionnaire was pre-tested by a colleague who had experience in teaching school food and nutrition subjects, and based on their suggestion, minor modifications in wording and flow were made to make it more user-friendly. The modified questionnaire was uploaded to the Qualtrics online platform. The online version of the questionnaire was trialled by the second author, and accordingly, a few final minor changes were made to the wording and flow of the questionnaire.

The Home Economics Institute of Australia (HEIA – a major professional organisation that supports the learning needs of school food and nutrition teachers in Australia) was contacted in May 2017 and was requested to distribute the survey invitation among its members who were teaching food and nutrition subjects in Australian secondary schools. HEIA sent the survey invitation to teachers in the form of an email alert (in May 2017), as newsletter feeds (in June and September 2017) and as Facebook posts to the HEIA Facebook page (in May and August 2017). The survey was conducted from May to October 2017.

Ethics approval for this study was granted by the Deakin University Health Faculty Ethics Advisory Group (HEAG-H 19_2017).

Data analysis

The responses to the questions were analysed using SPSS statistical software (IBM Corporation, Version 26, 2016). An exploratory principal component analysis (PCA) with varimax rotation (Pallant, 2013) was performed on the non-aggregated self-efficacy beliefs rating data associated with the 31 TEBS-self (overall-SEB) items. Exploratory PCA is a data reduction technique (Pallant, 2013) that involves reducing a larger set of variables into a more manageable, smaller set of latent components (Pallant, 2013). The suitability of the dataset for this type of analysis was determined at the beginning. The high Kaiser–Meyer–Olkin (KMO) measure (0.96 – higher than the recommended value of 0.6) and the statistically significant Bartlett's test of sphericity indicated the suitability of the dataset for PCA (Pallant, 2013). The PCA revealed the presence of three overall-SEB components (Table 2). Their internal reliabilities were assessed by calculating Cronbach alpha coefficients. Similarly, exploratory PCA was performed on the non-aggregated confidence rating data associated with 23 food and nutrition topics (KMO = 0.93; Bartlett's test of sphericity = <0.001). This also derived three topics-SEB components (Table 3), and their internal reliabilities were determined by calculating Cronbach alpha coefficients.

The teachers' ratings of the items that loaded on each component (three overall-SEB components and three topics-SEB components) were summed to generate total component scores, and then, the mean component scores were computed by dividing the total component scores by the number of items that loaded on each component. These were stored as separate variables. Independent sample *t*-tests were used to examine the differences in respondents' component scores based on their experience of teaching food and nutrition subjects and types and locations of their schools. Pearson correlation analyses were performed to examine the strength of the relationships between overall-SBE and topics-SEB component scores. In view of the use of multiple significance tests, a *p*-value of less than 0.01 was selected as the level of significance, to guard against type 1 error (Bland and Altman, 1995).

Results

Teachers' demographic and professional characteristics

In total, 183 teachers completed the survey, out of the 257 teachers commenced the survey, giving a completion rate of 71%. (The response rate could not be determined as the number of

teachers who received the survey invitation was not known.) The demographic and professional backgrounds of the teachers are shown in Table 1.

The teachers were predominantly female, and the majority were aged over 40 years. Half of the teachers had more than 20 years of experience in teaching food, nutrition or health subjects in secondary schools. The majority of the teachers taught in government schools, and slightly over half taught in schools in metropolitan areas (Table 1).

Teachers' self-efficacy beliefs in teaching food and nutrition subjects (overall-SEB)

The three derived principal components accounted for 66% of the variance in the teachers' ratings of their overall-SEB in teaching food and nutrition-related subjects. The loadings of individual items on each of the three overall-SEB components are shown in Table 2. These three components were provisionally named by considering the highest loading items on each of them as follows: (1) motivation and accommodation of individual differences, (2) classroom management and (3) communication and clarification.

Overall, higher percentages of teachers were confident or very confident in the majority of items that loaded on Component 2: classroom management and Component 3: communication and clarification compared to Component 1: motivation and accommodation of individual differences (Table 2).

Teachers' self-efficacy beliefs in teaching specific food and nutrition topics (topics-SEB)

The three derived principal components accounted for 61% of the variance in the teachers' ratings of their confidence in teaching specific food and nutrition-related topics. The loadings of individual items on each of the three topics-SEB components are shown in Table 3. These three components were provisionally named by considering the highest loading items on each of them as follows: (1) food system, (2) food and nutrition information and (3) food preparation.

Overall, higher percentages of teachers were confident or very confident about items that loaded on Component 2: food and nutrition information and Component 3: food preparation compared to Component 1: food system (Table 3).

Comparisons of the teachers' overall self-efficacy beliefs (overall-SEB) and topics self-efficacy beliefs (topics-SEB) by their teaching experience and location and type of school

Teachers who had more than 20 years of experience in teaching food, nutrition and health subjects showed significantly higher mean overall-SEB components and topics-SEB components scores compared to their less experienced counterparts (Table 4). There were no significant differences in teachers' overall-SEB or topics-SEB components scores based on the location or the type of their schools (data not shown).

Correlations between overall self-efficacy beliefs and topics self-efficacy beliefs components scores

There were moderate positive correlations between overall-SEB and topics-SEB components scores (ranging between $r = 0.38$ and $r = 0.69$) (Table 5).

Discussion

The findings suggest that in general, Australian secondary school food and nutrition teachers have higher self-efficacy beliefs in managing the classroom discipline and learning routines and their communication skills, compared to motivating and engaging students in food and nutrition learning and adjusting learning according to the students' capabilities. In

Items	Factor loading	Confident or very confident (%)
Component 1: food system (Cronbach alpha = 0.93)		
New food trends	0.75	78
Food ethics	0.74	71
Food politics	0.72	58
Food security, food citizenship and food sovereignty	0.69	60
Food science	0.68	74
Gastronomy and cuisines	0.67	75
Career opportunities in food and nutrition-related sectors	0.66	78
Food regulation and food policies	0.64	77
Role of food and food patterns in non-communicable diseases	0.63	71
History of food	0.61	75
Sensory analysis	0.60	88
Food literacy	0.59	86
Social value of food	0.57	86
Food system	0.53	82
Component 2: food and nutrition information (Cronbach alpha = 0.88)		
Healthy and unhealthy foods	0.77	99
Dietary guidelines	0.75	96
Navigating food information	0.68	91
Environmental sustainability	0.61	78
Nutrition principles	0.59	91
Influences on food choices	0.52	94
Component 3: food preparation (Cronbach alpha = 0.80)		
Use of cooking equipment, utensils and appliances	0.78	100
Food preparation and cooking	0.74	98
Food safety and hygiene practices	0.71	100

Table 3. Three topics-SEB confidence components – the factor loadings of each of the items and the percentages of teachers who were confident or very confident with the items

terms of specific topics, the majority showed high self-efficacy beliefs in teaching food planning and preparation, food safety and food information-related topics, and almost three-quarters reported high self-efficacy beliefs in teaching broader food-related topics such as food ethics, food history, etc.

	Less than 20 years (n = 92)		More than 20 years (n = 91)				
	Mean	SD	Mean	SD	t-value	df	p
Overall-SEB components							
Motivation and accommodation of individual differences	2.9	0.5	3.3	0.6	−3.88	180	<0.001*
Classroom management	3.1	0.5	3.5	0.5	−5.54	181	<0.001*
Communication and clarification	3.1	0.6	3.5	0.5	−4.44	181	<0.001*
Topics-SEB components							
Food system	2.9	0.6	3.3	0.5	−4.94	181	<0.001*
Food and nutrition information	3.4	0.5	3.7	0.4	−4.38	172	<0.001*
Food planning	3.7	0.4	3.9	0.2	−4.45	126	<0.001*

Note(s): *Difference is significant at the 0.01 level

Table 4. Teachers' overall-SEB component scores and topics-SEB component scores by teachers' experience in teaching food and nutrition subjects

Having high self-efficacy beliefs in classroom management and communication skills helps teachers achieve a pleasant classroom environment in which to deliver their lessons (Aloe *et al.*, 2014). However, teachers' self-efficacy beliefs with regard to motivating students and adapting the teaching and learning tasks according to the individual students' skill levels would provide maximum benefits to the students. The teachers' enthusiasm towards food and nutrition-related subjects and their level of food and nutrition-related knowledge and skills play an important role in this regard (Carraway-Stage *et al.*, 2014; Hall *et al.*, 2016). Most tertiary teacher preparation courses deal with pedagogy, classroom management and communication skills. However, most of these courses do not provide specific food and nutrition-related knowledge and skills. Thus, continuous professional development is important to provide food and nutrition teachers with up-to-date knowledge and skills in this area (Guskey, 2002).

It has been reported that professional development is positively associated with teachers' self-efficacy beliefs (Diker *et al.*, 2013; Fahlman *et al.*, 2011; Stage *et al.*, 2016). As the teachers showed lower self-efficacy beliefs in delivering broader food-related topics such as food ethics, food politics, food history, food sovereignty, food science and diet and non-communicable diseases, future professional development opportunities should include these aspects. Teachers can sign-up for professional associations' newsletters, discipline-related teacher networks, conferences and read credible food and nutrition-related sources to gain updated knowledge on food and nutrition (Nanayakkara *et al.*, manuscript submitted).

The duration of teaching experience has previously been reported to be positively associated with teachers' self-efficacy beliefs in many disciplines (Al-Awidi and Alghazo, 2012; Tschannen-Moran and Hoy, 2007). In the current study also, teachers with more years of teaching experience showed higher self-efficacy beliefs on all three overall-SEB components (i.e. motivation and accommodation of individual differences, classroom management and communication) as well as all topics-SEB components (i.e. food and nutrition information, food preparation and food system). This suggests that less experienced teachers may need more support in teaching food and nutrition-related subjects, and further studies should explore how to adapt teacher training sessions to better cater to the needs of the teachers according to their experience. Similar to the findings of Tschannen-Moran and Hoy (2007), the location and type of school were not related to the self-efficacy beliefs of teachers. In the Australian school setting, each state has their own curriculum, and the school can adapt it according to individual needs. This may be a reason for not observing a difference in teachers' self-efficacy beliefs based on the school context.

The moderate correlations between the overall-SEB and topics-SEB components suggest that other factors contribute to teachers' self-efficacy beliefs in addition to their self-efficacy beliefs in teaching different topics. According to Bandura, there are four influences over the development of one's self-efficacy beliefs. These are mastery experience (i.e. successfully executing a task previously), vicarious experience (i.e. observation of success of others

Table 5.
Correlations between overall-SEB component scores and topics-SEB component scores

	1	2	3	4	5	6
1. Motivation and accommodation of individual differences	1					
2. Classroom management	0.82*	1				
3. Communication and clarification	0.82*	0.79*	1			
4. Food system	0.58*	0.58*	0.58*	1		
5. Food and nutrition information	0.59*	0.63*	0.69*	0.77*	1	
6. Food planning	0.38*	0.45*	0.46*	0.49*	0.59*	1

Note(s): *Pearson correlation is significant at the 0.01 level (two-tailed)

especially the role models), verbal persuasion (i.e. encouragement from significant others) and emotional and physiological states (i.e. emotional, physical and psychological well-being of a person) (Bandura, 1977; Lopez-Garrido, 2020). Future studies should explore how these other influences affect Australian food and nutrition teachers' self-efficacy beliefs.

Implications for future research and practice

This study focused on broad secondary school food and nutrition education. The findings of the present study suggest the need for future follow-up surveys and interviews with teachers to gain a more detailed understanding of their teaching self-efficacy beliefs relating to food and nutrition subjects and underlying influential sources. Future studies could look more closely at the different years of schooling to examine whether there are any differences in teaching practices and teachers' self-efficacy beliefs based on the year level they are teaching. Furthermore, it is important to conduct a series of case studies on students' experiences and performances whose teachers' have varying self-efficacy beliefs. This would shed light on if and how the self-efficacy beliefs of teachers actually influence their students' food and nutrition learning outcomes.

The identified gaps in teachers' self-efficacy beliefs in delivering food and nutrition education should be addressed through future teacher training and professional development opportunities. An audit of what teachers are being taught about food and nutrition during their tertiary education is necessary for designing these professional development opportunities and future training courses. Establishing a standardised and continuous monitoring system of teachers' self-efficacy beliefs, perhaps as an annual survey conducted by Departments of Education, could be a good first step. This will enable the tracking of changes over the years across different states (and countries) and school types, enabling policymakers and school leaders to take measures accordingly to improve teachers' self-efficacy beliefs and improve student learning in these important subjects and topics.

Strengths and limitations

This study applied a relatively novel and comprehensive self-efficacy instrument (i.e. TEBS-Self) to determine, for the first time, the self-efficacy beliefs of Australian secondary school teachers in teaching food and nutrition subjects. This enabled an understanding of the areas of deficiencies in teachers' self-efficacy beliefs with regard to the teaching of secondary school food and nutrition subjects.

The teachers were recruited through HEIA, who happened to be the members of that institute at the time this survey was conducted. Therefore, the non-member food and nutrition-related teachers were not reached in this survey. Nevertheless, the demographic characteristics of the sample revealed that the sample consisted of a broad range of teachers. The sample size was relatively low; thus, the findings cannot be generalised to all food and nutrition-related teachers in Australia. In future studies, alternative avenues such as sending invitations via Departments of Education would help to reach a more diverse sample and a larger number of teachers.

Conclusion

In overall, a higher percentage of teachers showed high or very high self-efficacy beliefs in managing their classroom conditions and their communication skills, compared to their ability to adjust their teaching to meet the needs of the students and motivating them. Moreover, a higher percentage of teachers showed high or very high self-efficacy beliefs in teaching food preparation and food and nutrition information-related topics compared to broader food system-related topics. Self-efficacy beliefs were higher among more experienced

teachers. Education authorities, curriculum leaders and training and resource developers should consider these findings in designing and modifying the teacher support systems, such as professional development, to advance teachers' self-efficacy beliefs.

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Doctoral capital and well-being amongst Australian PhD students: exploring capital and habitus of doctoral students

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Abstract

Purpose – The Higher Degree Research (HDR) journey is known for its difficulties, complexities and challenges (Lees-Deutsch, 2020), with many students experiencing multi-faceted issues and concerns (Skopek *et al.*, 2020). Therefore, the purpose of this research is to investigate the relationships that exist between variables, vulnerability factors and doctorial capital of candidates (n = 532) studying at Australian universities (2019).

Design/methodology/approach – A quantitative cross-sectional correlational research design and Bronfenbrenner's socio – ecological framework (personal, home, university, community) was utilised to collect participants' (n = 532) descriptive statistics. Bourdieu's social reproduction theory was used as a lens to examine how experiences, across the PhD candidature, are influenced by several psychosocial factors and doctoral capital.

Findings – From such a dual methodological approach, the findings from this study suggests that (1) age, (2) gender, (3) nationality, (4) financial/work status, (5) years of PhD and (6) attending postgraduate (PG) student events, go to significantly ($p < 0.001$) impact (positively and negatively) on students' experiences and correspondingly, impacts on their self-confidence, motivation and mental health and well-being status.

Research limitations/implications – Research limitations are related to the recruitment of more doctoral students across more Australian universities. Further research is required from HDR supervisors, so as to "balance" the experiences of the PhD journey in higher education.

Practical implications – In order to succeed in academia and HDR programs, students need to identify with and develop the "right kind of capital" to successfully navigate fields of social and scholarly play. Investigating how the participants perceive their social and scholarly habitus is seen as crucial in helping students to develop positive dispositions relevant to being a doctoral student.

Social implications – The concept of doctoral capital and well-being, amongst Australian PhD students, is under researched and requires further investigation as a precursor to developing more specific policy designs aimed at providing heightened positive learning environments/HDR programs tailored to support doctoral students.

Originality/value – Whilst reforms to improve PhD experiences are well established across the international literature (Geven *et al.*, 2018; Skopek *et al.*, 2020), evidence for Australia is largely missing. It is envisaged, that findings from this research will further assist in the development of quality policies that would go to provide effective services and support for doctoral students within Australian universities.

Keywords Higher education, Emotional wellness, Mental health, Health promoting universities

Paper type Research paper

Introduction: what is doctoral capital and how does it impact on students' health?

Recent research indicates that there are increasing concerns, across the academic community, related to the doctoral candidature process (Walker and Yoon, 2017), with particular attention directed to the mental health and well-being of students (Mantai, 2017). With increasing government (Australia) interest in the social and economic outcomes of graduate education, there is a need to explore recent (2020) candidates' experiences in an attempt to improve delivery conditions (Torka, 2020). By adopting Bronfenbrenner's socio-ecological framework (home, university, personal and community), this research will investigate the multi-faceted variables/vulnerability factors that go to influence and impact on reaching students' social

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habitus and doctoral capital. The adoption of this framework identifies that multiple factors influence behaviour and that by understanding the inter-relationship between the four domains, interventions are more likely to be successful when they understand and target multiple components of the socio-ecological model (Ryan, 2001; Xia *et al.*, 2020). Similarly, from a Bourdieuian perspective, "concepts of cultural, social, and economic capitals are also relevant in understanding the many multi-faceted environments evident in doctoral education" (Nori *et al.*, 2020, p. 519).

This methodological duality fits well with this study, as it goes to allow for a more comprehensive approach to the investigation of participants' social and scholarly habitus. Similarly, Torka (2020) confirms that by investigating PhD students' multidimensional personal, social, economic and cultural backgrounds, there is real potential to better understand and reflect upon students' well-being, motivations, experiences and interpretations of their social world and academic community. Nori *et al.* (2020) further found that certain existing and acquired academic practices form a type of capital and that the composition of various forms of capitals are associated with academic success. Forms of capital can be divided into social (e.g. networks within and outside academia), economic (e.g. scholarships and paid employment) and cultural (e.g. enculturation across academia) fields, "with field seen as the academic arena in which the struggle for capitals takes place, and capitals emerge through habitus" (Nori *et al.*, 2020, p. 521). When evaluating the potential success rate of PhD students (both field and habitus), levels and types of individual doctoral capitals provide useful predictive measures (Walker and Yoon, 2017). Gardner and Holley (2011) argue that, "The education system rewards those possessing particular capitals and habitus and punishes those who do not" (p. 521).

Studies have suggested that there are varying levels of stress and barriers associated with academic positions; however, it is more prevalent among younger academics (Bozeman and Gaughan, 2011; Kinman, 2001; Reevy and Deason, 2014) or those posing lower levels of capitals (Walker and Yoon, 2017) or an inability to successfully navigate the complex social and behavioural processes associated with a doctoral position. Consequently, valid concerns have recently been raised in regards to the current working conditions and expectations of doctoral candidates and the impact on their mental health and well-being (Philips and Heywood-Roos, 2015; Schillebeeckx *et al.*, 2013; Shaw and Ward, 2014). Barry *et al.* (2018) outline that doctoral studies are highly challenging in nature. When compared to undergraduate students, doctoral candidates experience higher levels of stress (Toews *et al.*, 1997) and are evidenced as having higher attrition rates (Pearson, 2012). A growing body of evidence has reported an increase in psychological distress and mental health concerns among university PhD students (Browne *et al.*, 2017).

An increasing amount of the international literature and evidence illustrates that educational outcomes and degree completion can be compromised as a result of the psychological distress and emotional exhaustion experienced by doctoral candidates (Hunter and Devine, 2016; Levecque *et al.*, 2017) and that by increasing and developing specific personal and academic skill sets, students are better placed to contribute to scholarly habitus and navigate and obtain a certain level of capital mastery needed for succeeding in doctoral studies (Nori *et al.*, 2020). For example, Gopaul (2016) drew on cultural capitals and fields to explore the experiences and socialisation of students. He maintained, for success in doctoral studies to be achieved, specific aspects of doctoral capitals (i.e. publishing, managing supervision, employment, scholarship and conferences) "possessed particular rules of success that PhD students needed to recognize and demonstrate in order to be successful in their doctoral education" (Gopaul, 2015, p. 27). However, an inability of doctoral candidates to successfully understand (tacit knowledge fields), navigate and master capitals can place students at risk of failure and heighten individual vulnerability factors (e.g. poor self – confidence, stress, mental health, etc.).

The study

Surprisingly, studies have only more recently been conducted to investigate the nexus between developing positive doctoral capital and the impact on candidates' mental health (Barry *et al.*, 2018; Levecque *et al.*, 2017; Walker and Yoon, 2017). Levecque *et al.* (2017) investigated the mental health problems among 3,659 PhD candidates across multiple disciplines, universities and campuses within the region Belgium. Specifically, the most prevalent feelings noted by participants were: (1) being under constant stress/strain; (2) feeling unhappy and/or depressed; (3) having difficulty sleeping; (4) unable to overcome their difficulties and (5) unable to enjoy day-to-day activities (Levecque *et al.*, 2017). Hence, given that doctoral students need to develop and master different kinds/types of capitals, it is assumed, that in order to succeed in a HDR program of study, universities need to explore the mostly hidden curriculum (tacit knowledge fields) of academe and how these fields and social/scholarly habitus can be demystified and made more achievable and less problematic for students.

To gain a better understanding as to the body of work in this field, electronic searches were conducted in Google Scholar, PubMed, ProQuest, Web of Knowledge and ScienceDirect (2010–2020). Search terms represented "doctoral students/doctoral capital/habitus/HDR/mental health/wellness/Bourdieu/Bronfenbrenner" and were further sorted across an international and national (Australia) context. Multiple search terms identified few papers that met the criteria (esp. Australia) and combined associated terms, identifying a gap in the current research. As such, the concept of doctoral capital and well-being amongst Australian PhD students is under researched and requires further investigation as a precursor to developing more specific policy designs aimed at providing heightened positive learning environments/HDR programs tailored to support doctoral students.

Methods

Participants volunteered to complete an online survey. The total number of participants included in the study was 532 based on the following criteria: (1) currently undertaking a PhD program of study, (2) either full/part time and (3) living and currently studying in Australia. A total of 190 were excluded, as they did not meet the aforementioned criteria and/or only completed a portion of the survey. Participants were randomly invited by an email broadcast (2019) to complete an anonymous online survey, with the online survey link also being shared via social media networks by individuals and university postgraduate organisations. Survey promotion and circulation was from The Council of Australian Postgraduate Association (CAPA). This study was approved by the Griffith University Ethics Committee (Queensland, Australia).

A cross-sectional (correlational), quantitative study design, consisting of an online survey, collecting participants' personal variables (demographic and behaviours) was implemented. Demographic information included collecting participants' gender, age, type of study, family status, employment status and residential location (postcode); whilst behaviours included participants' drinking, smoking habits, physical activity attitudes and sporting club involvement. Survey design was based on adopting a socio-ecological model approach (Bronfenbrenner, 1994), which recognizes that multiple and inter-connecting domains (i.e. personal, university, home and community) impact on an individual's experiences, risk/vulnerability factors and well-being status. The survey design (i.e. questions) allowed for personal descriptive statistics to be drawn from against participants' personal demographics experiences connected with their PhD candidature and against Bronfenbrenner's four socio-ecological domains. Each domain had a number of self-reflecting questions, resulting in detailed participant profiling. A number of five-point Likert type scales were used to determine the level of agreement (e.g. - Strongly Disagree (SD) = 1 –Strongly Agree (SA) = 5).

A Bourdieuian approach was further utilised, so as to theorise participants' doctoral capital levels, fields and scholarly habitus; including social (e.g. networks within and outside academia), economic (e.g. scholarships and grants) and cultural (e.g. enculturation across academia).

Data analysis was undertaken using Statistical Package for the Social Sciences (SPSS) (PASW20) to allow comparison across groups. Data preparation involved the development of one SPSS file to incorporate all responses from the final survey undertaken. The initial data analysis used frequencies to provide a profile of respondents by personal variables (demographics). Outcomes were reported in terms of ordinal Likert scales (e.g. level of agreement) or magnitude estimation scale (e.g. stress level and level of agreement). In this and subsequent analyses, demographic variables with ordinal properties were entered in analyses as is, whereas variables with categorical properties were transformed into dummy (0,1) variables. As well as providing tabular lists of the number, mean (M), standard deviation, skew and kurtosis for such items, Spearman's rho correlation (r) matrix was used to examine the strength of the association between personal variables. p-values indicated statistically significant associations, at the one and two tail ($p < 0.05$* and $p < 0.001$**). Given the potentially large number of associations, only the highest significance ($p < 0.001$) were reported, with those where the probability of achieving the same outcome by chance was less than five in a thousand were presented. Similarly, only the highest numbers (N), percent (%) and mean (M) are reported for items across the domains. Such an approach goes to give stronger patterns of associations across the stated variables, vulnerability factors and doctoral capital. Bartlett's test of sphericity ($a = p < 0.05$) and (Kaiser-Meyer-Olkin = > 0.800) identified, with Bartlett's test of sphericity indicating that there were significant relationships amongst items ($p < 0.001$), and that the data were suitable for FA. The values for skew were measured to determine an acceptable normal range (0–1.96) for all items. Cronbach's alpha procedure provided evidence for the internal consistency (CA = > 0.700 acceptable).

Findings and commentary

Personal variables (demographics)

Table 1 represents a specific breakdown of personal variables (demographics) related to participants ($n = 532$).

Table 2 indicates participate profiling (ranked according to number (N) and per cent (%) – highest to lowest) associated with aspects of their PhD. Participants were asked to rate 26–29 items/aspects of their PhD candidature experience (i.e. personal, community and home/university). Using a five-point magnitude estimation scale with the extreme points anchored as follows (1) not challenging, (5) extremely challenging and (1) strongly disagree, (5) strongly agree. Data are presented in relation to participants' last scales, i.e. Challenging (C) + Extremely Challenging (EC) and Agree (A) + Strongly Agree (SA).

Table 3 indicates participant profiling (ranked according to mean [M] – lowest to highest) associated with aspects of their PhD. Participants were asked to rate 24–29 items/aspects of their PhD candidature experience (i.e. personal, community, home and university). Using a five-point magnitude estimation scale with the extreme points anchored as followed: (1) not challenging and/or stressful at all and (5) extremely challenging and/or stressful and (1) strongly disagree and (5) strongly agree. Skew levels all lay within the normal range (± 1,96).

Table 4 indicates participant profiling – combined correlations/profiling with data representing only the most significant ($p < 0.001$) and highest relationships (r) between variables. Table 4 identifies some of the more pronounced patterns of associations that go to support the PhD student profiling, associated experiences and doctoral capital.

Personal variables	$N = (532)$	%
Male	151	28
Female	374	70
Transgender	2	0.4
Other	5	0.9
21–25yrs	102	19
26–30yrs	164	31
31–35yrs	85	16
36–40yrs	72	14
40+ yrs	109	21
Qld	79	15
NSW	61	12
Victoria	25	5
SA	5	0.9
WA	354	67
ACT	5	0.9
TAS	3	0.6
Domestic	420	79
International	112	21
African	6	1
Asian	91	17
Pacific	4	0.8
European	88	16
Australian	343	65
Business	38	7
Education	25	5
Engineering	51	10
Health	163	31
Humanities	107	20
Medicine	16	3
Psychology	41	8
Science	91	17
First year	133	25
Second year	114	21
Third year	143	27
4+ yrs	116	22
Awaiting examiner feedback	26	5

Table 1.
Personal variables

In relation to age and gender (Table 4), data identifies that older (>) participants were more inclined to be positively and significantly ($p < 0.001$) associated with such aspects as, dealing with changes in supervisory team ($r = 0.163$), completing ethics applications ($r = 0.163$) and general happy with self ($r = 0.184$). Older participants were more inclined to be negatively and significantly ($p < 0.001$) associated with such aspects as, having friends at university ($r = -0.216$), doubting self ($r = -0.157$), difficulty in maintaining motivation ($r = -0.264$) and energy ($r = -0.270$), concerns about finding a job ($r = -0.192$), the imposter syndrome ($r = -0.193$) and having a sense of hopelessness ($r = -0.168$). Interesting, when compared to females, males were more inclined to be positively and significantly ($p < 0.001$) associated with such aspects as, feeling isolated in the community ($r = 0.156$). Males were also more inclined to be negatively and significantly ($p < 0.001$) associated with such aspects as, being anxious a lot ($r = -0.152$) and difficulty in developing a researcher ID ($r = -0.153$).

When comparing across nationalities (international/Australian students) (Table 4), Australians were more inclined to be positively and significantly ($p < 0.001$) associated with

Participant profiling (personal)	$N = C + EC$	%
Confidence and doubt (dealing with self-doubt)	338	63
I tend to experience feelings of "Imposter Syndrome" (dealing with IS)	328	61
I tend to feel stressed on a regular basis (dealing with stress)	323	61
I tend to get anxious a lot (dealing with anxiety)	320	61
Balancing commitments	317	59
Writing and publishing	293	56
Developing identity as a researcher	248	47
Mediating tensions between supervisors	101	19
Additions to or changes in supervisory team	100	19
Working with failing or inadequate equipment	98	19
Participant profiling (community)	**$N = A + SA$**	**%**
I feel safe in my community	343	65
I attend local and/or national sporting events in my community	74	14
I participate in a local sporting team	69	13
I attend my local Church	53	10
Participant profiling (home / university)	**$N = A + SA$**	**%**
I feel safe at home	500	94
I have a good relationship with the people I live with	456	85
I am generally happy at home	433	81
I feel I am generally doing well academically at university	271	51
I am generally happy at university	262	49
I have friends at university	250	46
I feel supported at university	195	36
I feel isolated at university	149	29

Table 2. Participant profiling (N & %) – personal, community, home and university

such aspects as, feeling safe at home ($r = 0.172$), increased use alcohol and smoke ($r = 0.159$) and suffer from the imposter syndrome ($r = 0.160$). Australians were more inclined to be negatively and significantly ($p < 0.001$) associated with such aspects as, tend to get anxious a lot ($r = -0.168$). Similarly, financial and work status (full or part time) impacted on students' experiences. Participants who had an increased (>) amount of financial earnings were more inclined to be negatively and significantly ($p < 0.001$) associated with such aspects as, concerns related to finding a job after graduation ($r = -0.232$). Whereas, participants who indicated full-time work (during PhD studies) were more inclined to be positively and significantly ($p < 0.001$) associated with such aspects as, self-management ($r = 0.151$), difficulty in maintaining motivation ($r = 0.118$), energy ($r = 0.183$) and a balanced diet ($r = 0.152$), concerns about finding a job after graduation ($r = 0.240$) and a sense of hopelessness ($r = 0.274$). Participants who indicated full-time work were more inclined to be negatively and significantly ($p < 0.001$) associated with such aspects as, happy at university ($r = -0.158$). Participants who indicated part time work were more inclined to be positively and significantly ($p < 0.001$) associated with such aspects as, happy at home ($r = 0.269$).

Participants who indicated increased (>) years of the PhD program (Table 4) were more inclined to be positively and significantly ($p < 0.001$) associated with such aspects as, able to meet milestones ($r = 0.159$), attend supervisor meetings ($r = 0.185$) and mediate tensions between supervisors ($r = 0.200$). Participants who indicated increased (>) years of the PhD program were more inclined to be negatively and significantly ($p < 0.001$) associated with such aspects as, being happy at home ($r = -0.247$) and a feeling that they lack support at the university ($r = -0.206$). Interestingly, participants who indicated that they attend PG student

	M	SD	Skew	Kurtosis
Personal (N = 532)				
Additions to or changes in supervisory team	2.11	1.390	0.905	−0.567
Mediating tensions between supervisors	2.17	1.370	0.844	−0.599
Working with failing or inadequate equipment	2.18	1.375	0.825	−0.629
Organising team meetings with your supervisor (s)	2.34	1.296	0.673	−0.670
Developing your identity as a researcher	3.31	1.253	−0.324	−0.824
I tend to get anxious a lot	3.55	1.256	−0.423	−0.923
Writing and publishing	3.62	1.094	−0.382	−0.610
I tend to feel stressed on a regular basis	3.63	1.250	−0.640	−0.602
I tend to experience feelings of "imposter syndrome"	3.67	1.443	−0.711	−0.879
Balancing commitment	3.70	1.110	−0.508	−0.560
Confidence and doubt (self-doubt)	3.82	1.161	−0.705	−0.392
Community (N = 532)				
I have regularly accessed the health and wellbeing services provided by my university	0.25	0.433	1.158	−0.662
I attend my local Church	1.46	1.179	2.393	4.115
I participate in a local sporting team	1.64	1.292	1.820	1.767
I attend local and/or national sporting events in my community	1.73	1.269	1.562	1.032
I am involved in community projects	1.90	1.290	1.161	0.037
I generally get on with people in my community	3.52	1.131	−0.518	−0.204
I feel safe in my community	3.79	1.157	−0.761	−0.203
University (N = 532)				
I feel isolated at university	2.65	1.322	0.248	−1.085
I feel supported at university	3.06	1.200	−0.102	−0.818
I have friends at university	3.25	1.349	−0.219	−1.154
I am generally happy at university	3.39	1.045	−0.454	−0.200
I feel I am generally doing well academically at university	3.40	1.111	−0.446	−0.425

Table 3.
Participant profiling (*M*) - personal, community and university

events and meetings were more inclined to be positively and significantly ($p < 0.001$) associated with such aspects as, doing well academically ($r = 0.220$), having friends at university ($r = 0.239$) and felt supported at the university ($r = 0.247$). Participants who indicated that they attend PG student events and meetings were more inclined to be negatively and significantly ($p < 0.001$) associated with such aspects as a sense of hopelessness ($r = -0.163$).

Discussion

Literature concerning how well candidates navigate the HDR landscape is largely dependent on the students' successful acquisition across a number of domains (personal, home, community and university) (Xia *et al.*, 2020). Similarly, Gopaul (2016) posits that students need to possess a level of mastery of doctoral capital, for example, academic publishing, participating in conferences, networking activities (research and otherwise), managing supervisory team/s, as well as other important skills useful and meaningful in the academic community (e.g. possessing a language and skill sets). To do well, supervisors and HDR coordinators and students need to become aware of the interchangeable domains, capital and fields that exist that go to develop/heighten social and scholarly habitus. "Student success is dependent on an experience and supervision that is a facilitative process, needing encouragement and test. It means providing educational charges and occupations, which include: going forward with respect to the candidature, mentoring, coaching the research project and sponsoring student involvement in academic performance" (Almusaed and

Table 4.
Combined correlation, participant profile, rho coefficient (+/−) and significant. (0.001**) (n = 532)

Correlations	Happy at home	Safe at home	Happy at uni	Doing well acad	Friends at uni	Supported at uni	Self mngt	Bal commit	Self-doubt	Happy with self	Positive body image	Anxious a lot	Diff to main motive	Diff to main energy	Diff to main diet	Alcohol / smoke
> Age			−0.185 0.001		−0.216 0.001				−0.157 0.001	0.184 0.001		−205 0.001	−0.264 0.001	−0.270 0.001		
Male												−0.152 0.001				
Female											−158 0.001	0.200 0.001				
Married		0.178 0.001			−0.178 0.001											
Asians																−0.168 0.001
Australian		0.172 0.001										−0.168 0.001				0.159 0.001
>Amount earned fin yr																
FT work			−0.158 0.001				0.151 0.001						0.118 0.001	0.185 0.001	0.152 0.001	
PT work	0.269 0.001															
No work																
Own residence	0.158 0.001	0.189 0.001												−0.152 0.001		
Rental		−0.202 0.001														
>Living Australia		0.156 0.001									−0.179 0.001	−0.168 0.001				
Live with a partner	0.172 0.001	0.152 0.001														
>Year of PhD	−0.247 0.001					−0.206 0.001			−207 0.001							
International students							−0.166 0.001									
>PG stdt org/ events				0.220 0.001	0.220 0.001	0.239 0.001			−239 0.001							

(*continued*)

Table 4.

Correlations	Finding job	Imposter syndrome	Hopelessness	Isolated in comm	Local Church	Milestone	Supvs mtgs	Supvsn rels	Supvn tensions	Changes in supvn	Lack support	Lack guidance	Lack training	Ethics app	Dev researcher ID
> Age	−0.192	−0.193	−0.168							0.163				0.163	
	0.001	0.001	0.001							0.001				0.001	
Male				0.156											−0.153
				0.001											0.001
Female				−0.174											0.164
				0.001											0.001
Married	−201													0.153	
	0.001													0.001	
Asians		−0.205			0.163				−168						
		0.001			0.001				0.001						
Australian		0.160													
		0.001													
>Amount earned fin yr	−0.232														
	0.001														
FT work	0.240		0.274				0.201		0.183			0.201			
	0.001		0.001				0.001		0.001			0.001			
PT work			−169												
			0.001												
No work	0.201														
	0.001														
Own residence	−0.211														
	0.001														
Rental															
>Living Australia	0.165														
	0.001														
Live with a partner															
>Year of PhD		−0.195	−0.168			0.159	0.185	0.198	0.200		−0.247				0.200
		0.001	0.001			0.001	0.001	0.001	0.001		0.001				0.001
International students															
>PG stdt org/ events		−0.201	−0.163	−0.203							−206				
		0.001	0.001	0.001							0.001				

Note(s): > represents more years e.g. – older age, more money earned, more time living in Australia, more years progressed in PhD studies and more PG events attended
PT = part time employment
FT = full time employment

Almssad, 2020, p. 37). With this said, research indicates, that an inability to achieve social habitus and doctoral capital, significantly impacts on students' financial concerns (Jackson, 2013), poor supervisory relationships (Ives and Rowley, 2005), lower self-management (Pearson, 1996, 2012) and adds to declining mental health status (Berry *et al.*, 2020). Of importance is that this research and its findings have gone to identify a number of social, economic and cultural doctoral capital and domains (personal, home, university and community) that impact on the doctoral experience. Specifically, data indicate that the predominate patterns of associations relate to: (1) age, (2) gender, (3) nationality, (4) financial/work status, (5) years of PhD and (6) attending post graduate (PG) student events, go to significantly ($p < 0.001$) impact on students' experiences (positively and negatively) and correspondingly, it can be indicated, impacts on their self-confidence, motivation and mental health and well-being status.

When looking across the data, it is interesting to note, that previous research indicates similar findings, that go to identify that experiences of inadequacy, incompetence and inferiority, associated with PhD studies and fellow students, appear to diminish with age, life experiences and is gender based (Nori *et al.*, 2020). Such a representation (as in this study), therefore, goes to imply that older students were (are) better able to navigate and potentially position themselves in a field of scholarly habitus. Watkins (2018) maintains that, "fields" and the actors' interactions throughout (in this case doctoral spaces), "not only involves relations between human actors but the interactions of humans with the non-human such as inanimate objects that over time, and in particular spaces, engender certain forms of embodiment" (p. 1). Similarly, data represented that participants who had more years (>) of experience in a doctoral program were more capable of achieving successful enculturation (especially management of supervision), across important fields and social, economic and cultural capital. The literature identifies that the undertaking and management of doctoral studies requires a concerted effort from all parties, with "the supervisor's responsibility to enforce safe study process practices and procedures; take immediate steps to correct a failure situation, have everything clear and systematic and if a hazard is identified, the supervisor must act" (Almusaed and Almssad, 2020).

Other interesting data patterns and findings, from this research, go to identify that international students do experience unique and challenging circumstances (domains and capitals) that impact on their doctoral studies. Specifically, such capital as cultural (e.g. enculturation across academia/community) challenges, go to impact on determining where to conduct study, language barriers and financial concerns (Schneider *et al.*, 2020). Findings from this research identify that those students who are Australian possessed differing patterns of associations (variables and capitals), when compared to international students, making for an area that would benefit from further exploratory research. Notably, literature indicates that financial concerns are a major barrier to achieving doctoral capital and scholarly habitus (Almusaed and Almssad, 2020). Data, from this study, indicate that those students, who pursue full time (FT) employment, whilst undertaking a doctoral program, do exhibit alarming significant ($p < 0.001$) positive associations with a number of important (negative) variables and vulnerability factors.

Viewing the patterns of associations, a number of important findings were further identified. It would seem that doctoral students, in this study, rated most highly, the difficult nature of navigating such social and cultural capital as: (1) balancing commitments ($n = 317$, 59%), writing and publishing ($n = 293$, 56%), developing identity as a researcher ($n = 248$, 47%), mediating tensions between supervisors ($n = 101$, 19%) and additions to or changes in supervisory team ($n = 100$, 19%). In addition, participants indicated that the majority suffered from vulnerability factors/psychosocial trauma associated with low confidence (self – doubt) (63%, $n = 338$, $M = 3.38$) and feelings related to anxiety (61%, $n = 320$, $M = 3.55$), continued heightened stress levels (61%, $n = 323$, $M = 3.63$) and suffering from

imposter syndrome (61%, $n = 328$, $M = 3.67$). Interestingly, the phenomenon related to the imposter syndrome and how this impact on candidates' experiences is worth noting (Wilson and Cutri, 2019).

Nori *et al.* (2020) further identifies that "some PhD students from low-educated families frequently experienced so-called imposter syndrome" (p. 2), with this aspect requiring more research and exploration" (p. 5). The imposter syndrome can be described in a variety of ways, but a frequently associated with a number of key points that connect to a fear of failure, feeling out of place and feelings of fraudulence (Bothello and Roulet, 2019; Chapman, 2015; Clance and Imes, 1978). Chapman (2013) outlines that success at a tertiary level requires a sense of belonging; however, lower levels of confidence and higher levels of self – doubt, goes to exaggerate the imposter syndrome, and therefore, impedes this by undermining one's ability to develop a resilient academic identity. Therefore, imposter syndrome can be considered detrimental to doctoral candidates who are continuously "questioning, examining and re-examining their thought processes as individuals and researchers" (Coryell *et al.*, 2013, p. 369). Developing one's researcher identity is demanding in terms of managing feelings of isolation (Roberts and McGinty, 1995); being able to recognise, allow and forgive one's imperfections (Fairbrother, 2004) and seeking help, advice and guidance in an environment where independence is expected (Gardner, 2008). With such demands, it has been reported that imposter tendencies are connected to diminishing self-concept, self-confidence and self-efficacy (Dahlvig, 2013; Ewing *et al.*, 1996), which can all contribute to anxiety issues and students' mental health and well-being (Bothello and Roulet, 2019).

Limitations

The study has a few identified limitations, with these primarily being associated with recruitment of male participants ($n = 151$) (i.e. lower levels compared to female participants [$n = 374$]). Whilst this may identify a gender-biased representation and results, it is indicated that this study is not solely concentrating on gender differences, but rather on the doctoral experience. However, to mitigate/minimise this potential limitation, the statistical data for both genders have been represented in percentages, thus allowing for comparisons. It could also be speculated that there are more females than males undertaking HDR programs across Australian universities. Other limitations may also relate to the over representation of participants from specific states of Australia (i.e. Western Australia [$n = 354$]). Given that the purpose of this study was to investigate the relationships that exist between variables, vulnerability factors and doctoral capital of candidates ($n = 532$) studying at Australian universities (2019), such an over representation is not seen to be a major limitation. This would be supported, primarily, due to the fact that Australia's HDR programs have a strict and rigours accreditation process to ensure that graduates skills are comparable across universities upon conferral.

Giving consideration to the above aforementioned limitations for this study, such comments are only speculative in nature and given the high level of reliability and validity of the test instrument (design and implementation), such future additions/considerations may not produce any significant differences on the stated purpose to this study. However, it is agreed that further thought is warranted as to how to make the data collection method more representative of achieving equal participant levels for both gender and state.

Conclusion

Despite the importance placed on the position of doctoral programs across the university sector and increasing concerns about the potential impact of navigating and mastering specific doctoral capital, there still remain difficulties in determining the best way forward for

supporting doctoral students. Many of the issues are viewed to be largely driven by tacit knowledge, confusing expectations and limited support; all of which can lead / heighten to students' non completions, poor mental health and well-being (Levecque *et al.*, 2017). With this in mind, this research investigated Australian doctoral students' experiences (i.e. variables, risk/vulnerability factors and doctoral capital) by adopting a dual method given the methodological approach, utilising Bronfenbrenner's socio-ecological framework and Bourdieu's social reproduction theory as a theoretical lens. From a Bourdieuian perspective, success in academia plays out and takes shape against and throughout stratified and hierarchical fields (Bourdieu, 1986). Doctoral students come to realise the "struggles" that need to take place in and across fields, with diverse capitals (to master) presenting themselves at critical points along and throughout the HDR journey. Findings from this study have gone to identify that Australia's doctoral students' social and scholarly habitus are multidimensional, making such as area of study interesting and complex.

Admittance to university, academic success and progress to doctoral programs, is viewed as more than good motivation, talent and intelligence, but more so related to "social selection, adequate cultural and social capital and habitus (Bourdieu, 1984; 1986; Weng, 2020, p. 4). Therefore, in order to succeed in academia and HDR programs, students need to identify with and develop the "right kind of capital" to successfully navigate fields of social and scholarly play. As a starting point, doctoral students would benefit from participating in a Community of Practice (CoP), where students come to understand different forms of capital and experiences, supported by a student/peer collective, offering different degrees of memberships and collaboration. Supporting such a claim are findings from this study, which strongly indicated that participants who engaged more with post graduate (PG) student events were significantly ($p < 0.001$) more inclined to feel that they were doing well at university ($r = 0.220$), had a friendship network ($r = 0.220$), felt supported by the university ($r = 0.239$) and lower levels of hopelessness ($r = -0.163$). For many students the learning undertaken when intellectual capital is provoked, stimulated and shared, within and throughout these collaborative environments, go to offer and cement solidarity, moral support and provides a rewarding forum for transactional capital distribution within a CoP.

In conclusion, although much of the research conducted in Australia has provided valuable data that could assist universities in supporting doctoral candidates, it has been found to be on a small scale with relatively small sample sizes and only limited to students from one university. Therefore, this supports the need for this current study, as it is nation-wide and included a larger sample size, thus attempting to provide a better representation of the experiences, psychosocial distress and doctoral capital that candidates in Australia navigate across a variety of disciplines and faculties. It is envisaged that findings from this research will further assist in the development of quality policies that would go to provide effective services and support for doctoral students within Australian universities.

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Further reading

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