



# Jurnal Keperawatan Indonesia

Urban Nursing Issues in Low-Middle Income Countries

Alternative Therapies of the Banjar People for Children with Fevers

Bibliometric Analysis of Research Trends and Novelties for Pneumonia in Children

Self-Efficacy in Salt Consumption Among Patients Undergoing Hemodialysis

Self-Management: A New Eight-Minute Stretching Program for Employees with Musculoskeletal Disorders (MSDs)

Traditional Art Dance Therapy to Reduce Stress Levels of Elementary School Students

Why Did They Fail? Investigating The Eight Invalid Dimensions of Patient Safety Culture: Mixed Method Research



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## Alternative Therapies of the Banjar People for Children with Fevers

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### Abstract

Fevers often occur in children under five years of age due to the immature formation of their immune systems. Such fevers signify that something unusual is happening in the body, often due to illness. Parents conduct various management techniques, such as medical or traditional treatments, based on their beliefs. Banjar society has a health culture known as *bapidara*, which is used to treat children with fevers presumably attributable to supernatural disturbances. This exploratory research aimed to discover what alternative therapies the Banjar people use to treat children with fevers. This qualitative study used a transcendental phenomenological design. Data collection was conducted with eight mothers who had children under the age of five using in-depth interviews. Five themes were identified based on the findings: the mothers' actions in treating children with fevers, the mothers' understanding of *bapidara* as local wisdom, the procedures for performing *bapidara*, the health progress of the children after *bapidara*, and factors that influence the choice of *bapidara* as a traditional treatment to relieve fever. This research can be used as the initial basis for cultural nursing care decisions in the development of complementary therapy for the initial treatment of children with fever at home using medicinal plants tested for their effectiveness as family-centered care.

**Keywords:** alternative therapies, Banjar people, children, fever

### Abstrak

**Terapi Alternatif Masyarakat Banjar dalam Penanganan Anak Demam.** Demam sering terjadi pada anak usia di bawah usia lima tahun karena pembentukan kekebalan tubuh yang belum sempurna. Demam juga menjadi penanda sesuatu yang tidak biasa sedang terjadi di dalam tubuh, seringkali disebabkan karena adanya penyakit. Orang tua melakukan berbagai tindakan pertolongan seperti pengobatan medis ataupun tradisional berdasarkan sudut pandang kepercayaan mereka. Masyarakat Banjar memiliki budaya kesehatan yang dikenal dengan *bapidara*, yang dipercaya sebagai pengobatan untuk anak demam akibat gangguan supranatural. Penelitian eksploratif ini bertujuan untuk mengetahui terapi alternatif apa yang digunakan masyarakat Banjar untuk mengobati anak yang demam. Penelitian ini menggunakan penelitian kualitatif dengan desain transenden fenomenologis. Pengumpulan data dilakukan pada delapan ibu yang memiliki anak balita melalui wawancara mendalam. Ada lima tema yang diidentifikasi berdasarkan temuan, yaitu: tindakan ibu dalam menangani anak demam, pemahaman ibu tentang *bapidara* sebagai kearifan lokal, prosedur melakukan *bapidara*, perkembangan kesehatan anak setelah *bapidara*, dan faktor-faktor yang memengaruhi memilih *bapidara* sebagai pengobatan tradisional untuk meredakan demam. Penelitian ini dapat digunakan sebagai dasar awal keputusan asuhan keperawatan budaya dalam pengembangan ilmu pengetahuan di bidang terapi komplementer untuk penanganan pertama anak demam di rumah dengan tumbuhan obat yang sudah teruji efektivitasnya sebagai perawatan berpusat pada keluarga (family centered care).

**Kata Kunci:** anak, demam, masyarakat Banjar, terapi alternatif

## Introduction

Children are the successors to the family, society, and state. Consequently, their physical, mental, social, and spiritual health must be considered at every stage of their growth and deve-

lopment. However, during this growth period, children often experience fevers caused by their immune systems, which are not optimally formed. In addition, one symptom that often signifies a child's illness is fever (Anggeriyane, 2019; Anggeriyane et al., 2021; Haryani et al., 2018).

Fevers generally make parents anxious and afraid because they think the fever is a serious illness. Parents will be calm if the child's fever is successfully reduced, because they believe the child's illness will be cured (Krisnanto et al., 2016).

Most studies in Africa show that 80% of pediatric and adult patients visit primary care facilities with a fever, and 40% have a cough. Moreover, 20% have diarrhea. Meanwhile, regarding children under the age of five at the community level, 90% have a fever, 20–60% have a cough, and 30% have diarrhea (World Health Organization [WHO], 2013). These fevers can subside; however, in a small percentage of cases, these fevers signify serious illnesses that result in child fatalities. In the UK, an estimated 20–40% of parents report that their children experience body temperature increases yearly (National Institute for Health and Care Excellence [NICE], 2019). Based on data released by Coimbatore Medical College Hospital (CMCH), 407 cases of children with high fever were treated as outpatients on September 2022 (Sathish, 2022). The symptoms of fever in children are mainly caused by respiratory tract infections, measles, typhoid fever, and digestive tract infections. In 2022, the proportion of children under five years old worldwide with fever requiring intervention or treatment was 60–80% (WHO, 2024).

Children's health efforts are expected to reduce children's mortality. The aim of efforts to maintain children's health is to reduce child mortality and prepare a future generation for health, intelligence, and wellness. Children's, under five years old, mortality rates, infant mortality rates, and neonatal mortality rates all measure mortality specific to children (Dinas Kesehatan Kota Prabumulih, 2019). The strategic plan target achievement of indicators for children under five years of age in health services was 75% in 2022. In reality, the achievement of indicators for children under five years of age in health services was 78.3%, and South Kalimantan is one of the provinces in Indonesia that reaches

80.6%. It can be concluded that the 2022 strategic plan target has been reached, and the 2024 strategic plan will target 85% (Kementerian Kesehatan Republik Indonesia [Kemenkes RI], 2023b). A fever of unknown origin (FUO) was the third most common cause of disease for children under five years of age in 2017. This shows an increase from 2016, which was fourth place (Dinas Kesehatan Kota Banjarmasin, 2018). Recapitulated data from the Community Health Center's Integrated Childhood Illness Management (IMCI) Program from January to August 2018 show that fever ranked fourth after ear problems, nutrition, and coughing (Anggeriyane, 2022).

Some parents immediately take their children to health services upon detecting a fever. However, some parents think that fevers are normal because the symptoms will go away on their own. Others take their children to traditional medicine because they believe spirits are disturbing them. Indeed, most parents have different perspectives on dealing with a child's fever (Astutik et al., 2016; Resmi et al., 2017). However, the level of maternal knowledge varies greatly, resulting in differences in the management of fevers in children. Research results have shown that the first treatment for a child with a fever is applying a compress, taking a child to a doctor, giving the child an antipyretic medication, or doing nothing (Sudibyo et al., 2020). A mother's experiences enhance the handling of fevers, because the mother's experiences largely control a child's world. A mother's ability to care for her children is influenced by various family, social, and cultural factors (Masdiana et al., 2016).

Traditional health services can be integrated with children's health services to support promotive, preventive, curative, and rehabilitative efforts (Kemenkes RI, 2023a). Moreover, in 2018, 31.4% of households used traditional health services. In South Kalimantan, the highest proportion of households using traditional health services was 54.1%. The types of traditional health measures most frequently utilized by households are ready-made concoctions (58.4%),

homemade concoctions (17.9%), manual skills (83.3%), thinking skills (1.6%), and energy skills 1.8% (Kemenkes RI, 2019).

One of the complementary traditional medicines that the Banjar people employ for children with fever is *bapidara* (traditional treatment for fever). *Bapidara* comprises a prayer and the ritual of applying turmeric (*Curcuma Longa*) and lime to certain parts of the body, such as the forehead, palms, chest, back, and soles of the feet, with the cacak burung mark (Astutik et al., 2016). Several experimental studies and clinical trials have examined curcumin as a component of turmeric. The benefits of curcumin include antinociceptive, antiviral, anti-inflammatory, antifatigue, and antipyretic effects (Babaei et al., 2020). Asian traditional medicine has used curcumin for many years to treat a wide range of illnesses. Curcumin has a breadth of natural and pharmacological properties, according to numerous studies, and there is no evidence that the compound is poisonous (Praditya et al., 2019).

In August 2018, researchers conducted a preliminary study on mothers who had treated their children for fever. The mothers said that the Banjar people believed in modern scientific and traditional medicine as the mothers often chose between *bapidara* and modern medicine or both. If their child has typical fever symptoms, they believe that their child is disturbed by the supernatural and should be treated by *bapidara*. Health workers confirmed that most children with fever had been brought by their parents to traditional healers, both before and after further control at the community health center. This can be seen in children's orange turmeric and lime cacak burung marks.

Based on cases that have explained, an appropriate and fast treatment of children under five with fevers is necessary to avoid worse conditions, such as complications of dehydration, decreased consciousness or neurological function, febrile seizures, and even death. The *bapidara* culture of the Banjar community is

still the first alternative for mothers to treat their toddlers with fevers because they assume that supernatural beings caused their children's sicknesses, which cannot be explained medically. Therefore, this study explored Banjarese mothers' experiences with choosing alternative therapies when children have fevers.

## Methods

The research purpose was to explore the Banjarese people's choice of alternative therapies when their children have an FUO. This qualitative study used a transcendental phenomenological design with purposive and snowball sampling techniques to determine the participants. Eight mothers with their children were selected based on the research objectives and criteria. Data retrieval stopped when there was no new information regarding the research theme. The individuals included in this research identified as Banjarese, lived in the North Kuin village, had children under five, had brought children with fevers for *bapidara* treatment, communicated well, had information and experience concerning the research's themes, and agreed to engage in this research.

North Kuin of Banjarmasin city, Indonesia, was the research site. From April 2018 to January 2019, data were collected through in-depth interviews and field notes. In this study, the analysis took place using structured analytic methods from Creswell (2015). The researcher clarified the verbatim transcripts obtained from the interviews (participant check) and the results of the field notes to all participants to ensure the credibility of the study's results. The researcher also maintained the data's credibility with source triangulation. Sources were triangulated by clarifying the results of transcripts and analytic results regarding traditional healers, health workers, and families living in the same house. The data collection protocol was approved by the ethics committee of the University of Muhammadiyah Banjarmasin; see certificate number 144/UMB/KE/X/2018.

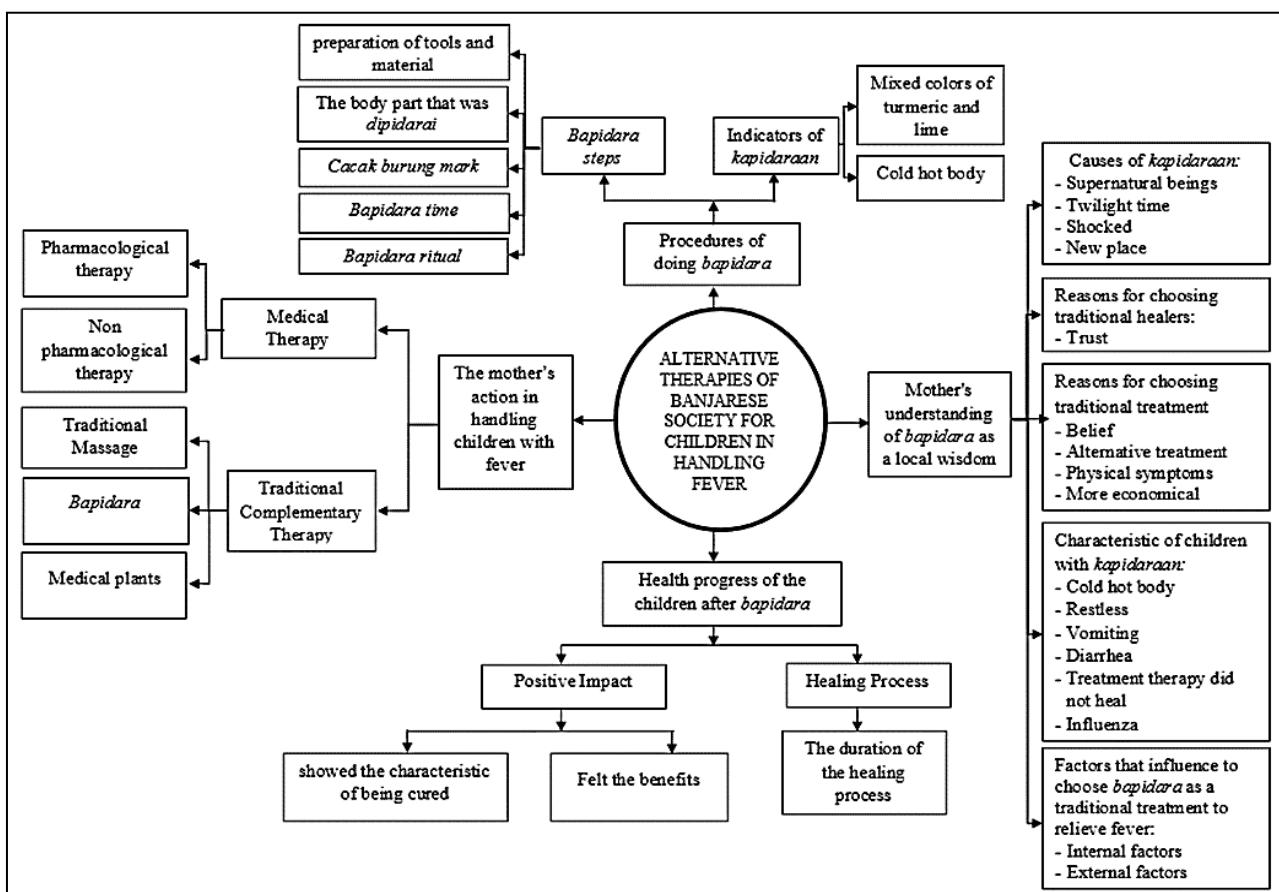


Figure 1. Themes of the Mother's Experience with Handling Children with Fever

## Results

The participants in this study included eight mothers who were at least 21 years old, had completed elementary school through junior high school, and were housewives with one to four children. Five themes were identified based on the findings: the mother's actions in handling children with fevers, the mother's understanding of *bapidara* as local wisdom, procedures for performing *bapidara*, the health progress of children after *bapidara*, and factors influencing the choice of *bapidara* as a traditional treatment to relieve fevers (Figure 1).

*Bapidara* is a unique therapy not found in other traditional treatments. The participants in this study believed that their children can be healed through *bapidara*. The classification of comple-

mentary health approaches based on the National Center for Complementary and Integrative Health (NCCIH) is derived from natural products and mind and body practices. The complementary therapy field is dynamic and constantly changes as new findings emerge. Some originate from indigenous cultures (Lindquist et al., 2018).

Nowadays, with increased living standards, the influence of the health culture has become more important because people conditionally use resources in their lives. Culture can influence people's thinking and behavior, thereby affecting their health. Based on existing research, it is essential to comprehend the factors influencing health outcomes to more thoroughly assess the influence of health culture on health outcomes (Jia et al., 2017).

## Discussion

**Mothers' Actions in Handling Children with Fever.** Mothers have several choices when dealing with a child with fever, namely, medical and complementary therapy. Even though medical treatment is a top priority, if parents notice no improvement in their children's health, they may take them to traditional complementary therapies, such as *bapidara*, because they believe that supernatural beings are disturbing the child or that traditional medicines are thought to lower fevers. They may also believe that their child has sprained an ankle and may use traditional massage to treat it. Participants considered *bapidara* the last alternative in the traditional management of children with fever because they thought that supernatural beings instigated their children's illnesses, the cause of which could not be explained scientifically. However, some participants immediately gave children *bapidara* procedures if certain physical symptoms appeared, such as *kapidaraan* (disturbances by supernatural beings). The results revealed a fast-healing process believed to be among the main treatments for children under five with fevers.

Parents play an important role in caring for children with fevers, especially mothers (Anggeriyane, 2022; Mora et al., 2020). A mother's role in parenting is mandatory, so children become intelligent and remain physically and mentally healthy. A mother with good knowledge and attitudes about fever can be successful in treating fevers in her child (Doloksaribu & Siburian, 2017).

Fevers can be handled by pharmacological therapies, non-pharmacological therapies, or a combination of both (Rodriguez & Martin, 2019; Wardiyah et al., 2016). Mothers tried to treat children's fever with methods of measuring it, such as using a thermometer, touching their skin, soaking their feet, fanning them, removing children's clothes, cooling the room's air, bringing their children to a doctor, or self-handling drug therapy using medicinal plants (Tafti et al.,

2017). These herbal remedies were discovered based on their personal experiences. After a home care procedure that they considered ineffective for their child, most parents consulted a doctor (Tafti et al., 2017). Cultural status, social class, economic status, and maternal education all affect how mothers handle fever (Tafti et al., 2017).

The Banjar people believe in herbal plants to treat fever in children under five using the *bapidara* method, namely, turmeric (*Curcuma Longa*). Traditional medicine is derived from knowledge, skills, and practices based on a community's pre-existing theories, beliefs, and experiences and is used to maintain health as well as to prevent, diagnose, and treat physical and mental illnesses. Traditional medicine based on local knowledge raises the standard of living for a local community's health and economy. Community access to treatment will be easier because it is adapted to the local ancestral heritage to overcome health problems if the community can optimize traditional medicine. The WHO launched its traditional medicine strategy to acknowledge the crucial role of traditional medicine around the world. This initiative integrates traditional medicine into the global healthcare discussion (Pan American Health Organization [PAHO], 2023). In 2023, the Health Assembly decided to extend the WHO Strategy on Traditional Medicine (2014–2023) by two years and requested that the director general formulate a new strategy for 2025–2034 (Cramer, 2023).

**A Mother's Understanding of *Bapidara* as Local Wisdom.** Culture refers to the patterned way of life, values, beliefs, norms, symbols, and practices of an individual, group, or institution that has been learned, shared, and usually passed from generation to generation (Alligood, 2017). The traditional healers who use *bapidara* are one's "mother of grandmother and grandmother." People who can heal are not careless because the criteria for traditional *bapidara* healers include older people who know the prayers said during the *bapidara* process, have

the ability for *mamidarai*, descend from previous ancestors of Banjar society, and hail from Banjar society.

Traditional healers can cure their patients using methods inherited from their ancestors (Astutik et al., 2016; Megawati et al., 2022). *Bapidara* is one way that the Banjar people have treated fevers that has been long passed from generation to generation. *Bapidara* is a customary Banjarese cure for children's fevers that are caused by disturbing hereditary occultic creatures (Resmi et al., 2017).

Participants believed that these supernatural creatures caused children aged five and under to experience fever because the children went outside at dusk, experienced a shock, or visited new places, such as a pilgrimage to a grave. Magical creatures or people invite a baby or child to play. In small children, this usually occurs due to the accidental appearance of supernatural beings when the child sees the presence of spirits somewhere, resulting in shock. For the Banjar community, there are three types of diseases: medical, psychological, and magical. Even though magical diseases concern visible signs of physical and psychological ailments, magical diseases must be treated magically using typical rituals, certain requirements (offerings, speeches), and the leadership of a *pananamba* (Nugraheny, 2021). Most parents did not know the exact causes of their child's fever—that is, whether the fever was due to *kapidaraan* or other causes. An FUO is defined as a fever that lasts more than one week, with negative examination results (Barbi et al., 2017).

Participants believed in traditional *bapidara* healers based on their experience with children recovering from fever with the aid of traditional healers. The reasons for subjects choosing traditional treatments varied. Individuals chose the traditional *bapidara* treatment because they believed that a child with a fever would recover with *bapidara*. After medical treatment and antipyretic drugs have been used, *bapidara* is an alternative treatment. Due to their previous

experience with the typical symptoms of a child's fever, subjects believed that the correct handling of it employs *bapidara*. Another reason for treating a child's fever with *bapidara* is that it is more economical. No participants disclosed the relatively lower effects of toxicity with the use of traditional medicinal plants.

The belief in the efficacy of traditional medicine, itself, is because these drugs have been used from generation to generation. Although contemporary beliefs have eroded trust in traditional medicine, it survives today because of the belief in the positive effects of traditional medicines and medicines derived from natural ingredients. In addition, the reasons for supporting the use of traditional medicines are economic factors and ease of access (Situmorang & Harianja, 2014). Leininger theorized about how to facilitate a culture's use of alternative therapies in a transcultural nursing model using cultural preservation, cultural accommodation, and cultural re-patterning (Alligood, 2014).

Characteristics of children under five who are believed to experience *kapidaraan* felt heated within their torso while their ears and feet left cold. These typical symptoms can be accompanied by anxiety, vomiting, or medical and complementary medical therapies that cannot reduce fever, diarrhea, and influenza. Based on the participants' signs and symptoms of fevers, they did not mention all categories of infection without local signs or accompanied by local signs, a fever accompanied by rashes, or a fever lasting over seven days. An infection or inflammation caused by bacteria, viruses, or other pathogens stimulates the release of endogenous pyrogens (interleukin, tumor necrosis factor, and interferon). Pyrogen works in the hypothalamus, triggering the production of prostaglandins and increasing the temperature set point. Consequently, the body experiences a cold response, which results in shivering, vasoconstriction, and decreased peripheral perfusion to help prevent heat loss. This also enables the body temperature to increase to a new set point (Kyle & Carman, 2015).

**Bapidara Procedures.** Treatments attempt to cure a disease. Generally, experts perform treatment, such as medical personnel (doctors) or healers (shamans). Both professions have their own ways of healing a person's disease (Setyoniingsih & Artaria, 2016).

The use of tools and materials for the *bapidara* process from each traditional healer was inherited from the previous generation. The main ingredients used are lime and turmeric, which were agreed upon in an oath with the disturbing ghosts or spirits. The reddish-yellow color of crushed turmeric implies "hit by supernatural disturbances" and is used if the child's condition has long persisted and is quite severe (Astutik et al., 2016). Lime water is an alkaline solution, while turmeric originally is orange. Indicators of acids and bases made by mixing lime water with turmeric extract produce red. Thus, the quality and quantity of alkaline solutions will change with the scouring of turmeric and lime during *bapidara*.

The use of turmeric as an antipyretic is widely prescribed orally by mixing it with plants or other ingredients. However, there is no explanation for using turmeric with betel lime in *bapidara*, which is used topically. Lime has the chemical formula  $\text{CaCO}_3$ , so its main content is calcium. The contents of turmeric include essential oils, curcumin, turmerone, and zingiberene, which are beneficial because they are antibacterial, antioxidant, and anti-inflammatory. As with lowering a fever, this mixture can also enhance strengthen the immune system. Generally, orange-colored rhizomes are used (Hidayat et al., 2015; Khalandar et al., 2018).

Curcumin can be selected as an anti-inflammatory, antipyretic agent because it works through the inhibition of  $\text{PGE}_2$  production induced by lipopolysaccharides (LPS) in macrophage cells. Curcumin inhibits the change of arachidonic acid to  $\text{PGE}_2$  using the enzyme cyclooxygenase-2 (COX-2). Decreased  $\text{PGE}_2$  will decrease cyclic Adenosine Monophosphate (cAMP), which will lower the hypothalamic setpoint so

the body will carry out a mechanism to decrease and normalize the body's temperature (Ashraf & Sultan, 2017). Accordingly, turmeric's curcumin has an antipyretic effect. The treatment of fever may be based on this potential effect (Azis, 2019).

The body part applied with a turmeric and lime mixture shows the area of the lymphatic system in the body of the child. The lymphatic system transports a liquid called *lymph*. This fluid disperses immune components and cells throughout the body. To remove fluid from cells and body tissues, the lymphatic system works with the blood circulation system (Wardhani & Kentjono, 2015).

An indicator of *kapidaraan* that participants trusted was when the child's ears and feet felt cold. During fever, the body has a target core temperature that exceeds the normal value to be achieved by the body, itself. When increasing the body's core temperature, the body's organs make several adaptations, such as shivering and trembling in the body's peripheral parts or extremities, such as the hands and feet, which feel cold and look pale (Astutik et al., 2016).

**Health Progress of Children After Bapidara.** All participants felt a positive impact after *bapidara*, such as the children under five feeling its benefits and showing recovery characteristics. Participants explained the characteristics of the two- to three-day recovery from the perspective of children under five with fever, such as decreased temperature, ears and feet no longer cold, sweating, not being fussy, and resuming activity after recovery from fever, which immediately cured the child.

The fourth phase of fever is healing phase. The healing phase is phase after prodromal, seizure and fever. In this phase, the set point decreases, and the body releases heat to adjust to the normal set point. Consequently, heat is released through the sweating process. Fever helps develop specific immunity and is nonspecific for assisting with the recovery or defense against

infection and how quickly children's healing process can be affected by microorganisms that enter the body and children's immune system (Chairulfatah, 2017). The recovery time for children with fever varies greatly between traditional and modern treatments. A study explored the factors influencing the use of traditional medicine for children in Ethiopia and found that the use of traditional medicine can be effective in reducing fever and hastening the healing process (Hailu et al., 2020).

**Factors That Influence the Choice of *Bapidara* as a Traditional Treatment to Relieve Fever.** Sources of support for participants' choosing the traditional treatments of *bapidara* include internal factors, external factors, and both. The internal factor is support that originates from the participants. External factors include outside support, such as a spouse, parent, and people who uphold trust in traditional *bapidara* treatments. Mothers' ability to care for children is affected by various factors, including family and sociocultural factors. Mothers' experiences when caring for a child's fever can have a positive and negative impact on the healthy development of children (Masdiana et al., 2016). Factors that influenced parents' management of fever were previous experience, support from the family environment, working with mothers outside the home, shared responsibility by parents, the child's age, and the parents' health training. Health professional parents perceive an extra responsibility for the diagnosis and treatment of children's fevers (Rodriguez & Martin, 2019).

**Limitations.** The use of in-depth interviews without the observation method allows biased data collection. To reduce researchers' bias, sources should triangulate each family of participants, traditional healers, and health workers at a pediatric clinic. Interviews with respondents were conducted not just once but repeatedly to obtain complete and in-depth information. Semi-structured interviews used open-ended questions in which the order of questions was not always the same for each participant,

depending on the interview process and the answers of each participant. However, the "Mothers' experience in handling children with fever" guidelines or standards for the interviewer guide (Astutik et al., 2016) ensure that the researcher collects the same type of data from the participants.

## Conclusion

Five themes were identified based on the findings: the mother's actions in treating children with fever, a mother's understanding of *bapidara* as local wisdom, *bapidara* procedures, children's health progress after *bapidara*, and factors that influence the choice of *bapidara* as a traditional treatment to relieve fever. Treating children's fevers consists of medical inventions, traditional complementary therapies, and a combination of both. The uniqueness of mothers' understanding of *bapidara* as local wisdom for children's health originated from previous Banjarese generations, which developed explanations for physical and magical diseases. Hence, participants trust traditional healers' *bapidara* procedures. The development of children's fevers after *bapidara* augments children's health and their relatively short recovery process. Factors affecting mothers' choice of traditional treatments for children with fevers comprise intrinsic and extrinsic factors and a combination of both.

Few qualitative or quantitative researchers have explored Indonesian mothers' insights into treating fevers for children dependent on Banjar society's way of life. Therefore, further exploration is warranted. This work has examined significant phenomena not previously investigated, so it tends to be a recommendation for analysts who are keen on quantitatively analyzing the viability of *bapidara* in children under five with a fever. Health workers should develop standard operational procedures for handling fevers in children based on evidence-based practices. Thus, the standard operational procedures for handling fevers in children will become the basis for culturally related parenting decisions

in developing knowledge in the field of complementary therapies.

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## Bibliometric Analysis of Research Trends and Novelties for Pneumonia in Children

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### Abstract

Pneumonia is the leading cause of death among children globally, with most cases occurring in low- and middle-income nations. Pneumonia in children has been thoroughly researched in numerous countries throughout the world. However, no research performed bibliometric analyses of pneumonia in children. This study aims to use a biometric analysis to determine trends in the number of publications, the number of citations, network visualization, overlay visualization, and density visualization concerning the issue of pneumonia in children. This research method employs a systematic review with stages adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart. The highest publication increase occurred in 2020, with a rise of 2,739. The number of citations increases exponentially from year to year. The most cited article is "The Epidemiology and Pathogenesis of Coronavirus Disease (COVID-19) Outbreak," with 3,680 citations. Keywords and interest trends in pneumonia in children focus on viral pneumonia. The endeavor to perform a bibliometric analysis of pneumonia in children may be revisited in the next few years. Notably, this article only extracts data from scientific articles within the app.dimension.ai database. Further research may be conducted to add other databases and ensure a more comprehensive understanding of pneumonia in children.

**Keywords:** bibliometric analysis, children, novelty, pneumonia, risk factor, trend

### Abstrak

**Analisis Bibliometrik Tren dan Kebaharuan Penelitian terkait Pneumonia pada Anak.** Pneumonia adalah penyebab utama kematian di antara anak-anak di seluruh dunia, dengan sebagian besar kasus terjadi di negara-negara berpenghasilan rendah dan menengah. Pneumonia pada anak telah diteliti secara menyeluruh di berbagai negara di seluruh dunia. Namun, belum ada penelitian yang melakukan analisis bibliometrik terhadap pneumonia pada anak-anak. Penelitian ini menggunakan analisis bibliometrik untuk menentukan tren jumlah publikasi, jumlah kutipan, visualisasi jaringan, overlay visualization, dan visualisasi densitas terkait masalah pneumonia pada anak. Metode penelitian ini menggunakan tinjauan sistematis dengan tahapan yang mengikuti Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart. Peningkatan publikasi tertinggi terjadi pada tahun 2020, dengan peningkatan sebesar 2.739. Jumlah kutipan meningkat secara eksponensial dari tahun ke tahun. Artikel yang paling banyak dikutip adalah "Epidemiologi dan Patogenesis Wabah Coronavirus Disease (COVID-19)," dengan 3.680 kutipan. Kata kunci dan tren minat pada pneumonia pada anak berfokus pada pneumonia virus. Upaya untuk melakukan analisis bibliometrik pneumonia pada anak mungkin akan ditinjau kembali dalam beberapa tahun ke depan. Sebagai catatan, artikel ini hanya mengekstrak data dari artikel ilmiah dalam database app.dimension.ai. Penelitian lebih lanjut dapat dilakukan untuk menambahkan database lain dan memastikan pemahaman yang lebih komprehensif tentang pneumonia pada anak-anak.

**Kata Kunci:** anak-anak, analisis bibliometrik, faktor risiko, kebaharuan, pneumonia, tren

## Introduction

Pneumonia is the leading cause of death among children around the world. The incidence of clinical pneumonia in children under five is about 152 million, mostly occurring in low- and

middle-income countries (Nasrin et al., 2022). Pneumonia is a common acute respiratory infection that attacks the alveoli and distal airways (Torres et al., 2021). The leading bacterial cause of pneumonia in children is Streptococcus pneumonia; the leading viral cause is

syncytial virus; lastly, the main fungal cause is *Pneumocystis* for children born with human immunodeficiency virus (HIV) (Adawe et al., 2023). Pneumonia is the most prevalent cause of child mortality, accounting for around 6.0% of the 5.9 million deaths in the under-five age group in 2015, killing approximately 900,000 children. Pneumonia claims more than 2,500 children's lives every day, or more than 100 every hour (Keleb et al., 2020).

Lack of exclusive breastfeeding during the first six months after birth, start time of giving exclusive breastfeeding and variation of improper composition of complementary foods, anemia, malnutrition, child age, sex, birth order, low birth weight, prematurity, low educational attainment by the mother, low socioeconomic status, and indoor pollution due to cigarette smoking are all significant risk factors for pneumonia in children (Adawe et al., 2023; Yadav & Awasthi, 2023). Malnutrition is a key risk factor for poor pneumonia outcomes and early mortality (King et al., 2022; Liapman et al., 2023). Individuals and communities must know the risk factors contributing to treatment failure and death to prevent, diagnose, and treat pediatric pneumonia (Mvalo et al., 2022). In terms of prevention, it helps health practitioners and community

leaders identify and intervene with individuals and communities at risk of adverse consequences (e.g., malnutrition). Risk stratification is crucial in the diagnosis and therapy because it allows patients to be prioritized for appropriate treatment (e.g., who needs hospitalization and home care) and encourages the most efficient use of available resources (Wilkes et al., 2023). Many children hospitalized with pneumonia develop hypoxemia, and one in 10 children die. Young age and malnutrition are among the risk factors associated with pneumonia that necessitate hospital treatment (Hooli et al., 2023). Delays in seeking health care are also among the factors that contribute to pneumonia-related deaths (Temsesgen et al., 2023). B.K. et al. (2022) conducted a study on the prevalence of pneumonia in hospitalized children. Pneumonia is most commonly found in vulnerable age groups, namely children aged 2–59 months, with a higher prevalence in children aged 2–11 months and in men (B.K. et al., 2022).

Over time, interest in pneumonia among children worldwide has increased. As discussed by Fauzy et al. (2022) and Moral-muñoz et al. (2020), relevant data can be uncovered through Google Trends (<https://trends.google.com/>) by typing the following keywords: "pneumonia in

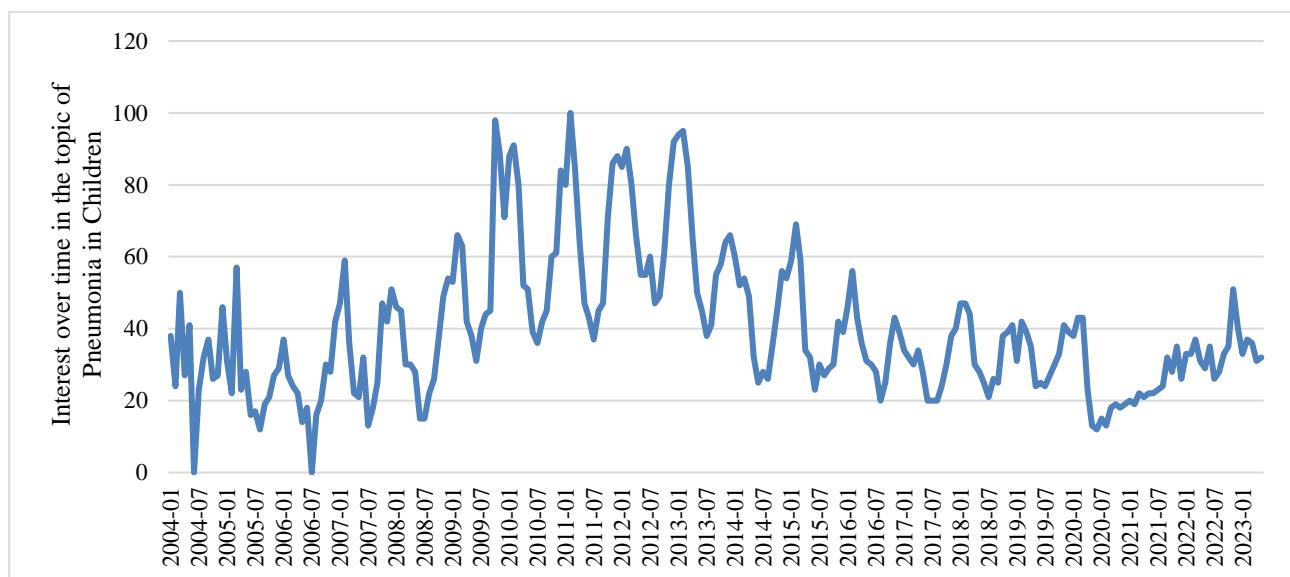


Figure 1. Interest Over Time in the Topic of Pneumonia in Children

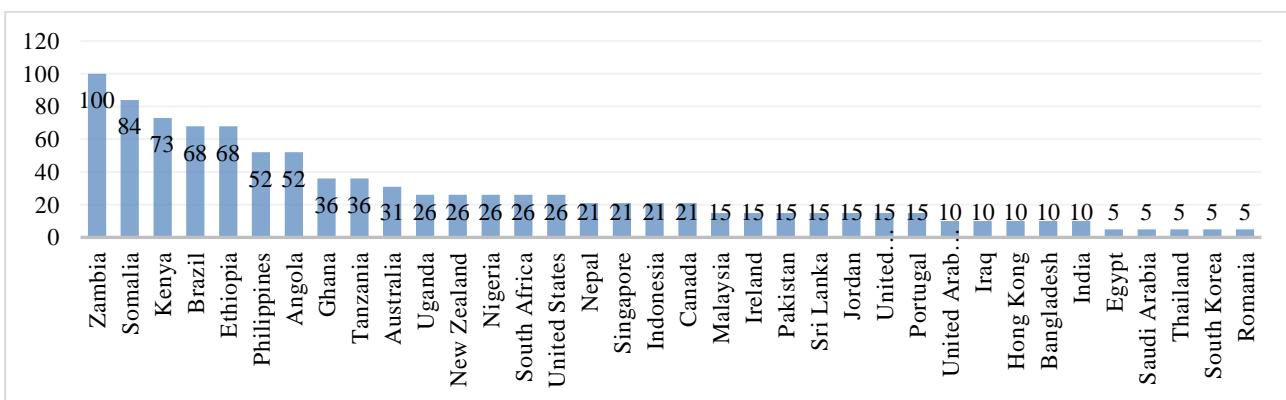


Figure 2. Diagram of Interest by Country in the Topic of Pneumonia in Children

children." For example, a search of data from January 2004 to December 2022 that involved selecting "web search" and "all categories" yielded the data presented in Figure 1. This data was collected on May 29, 2023. Interest in pneumonia in children can also be reviewed by country, as illustrated in Figure 2. Zambia has the highest interest in pneumonia in children, followed by Timor Leste.

The data illustrates general interest in the topic of pneumonia in children. Researchers who wish to investigate the topic of pneumonia in children require more detailed information, such as scholarly publications in the form of scientific journals. Researchers in this study require information concerning future trends and novelty concerning pediatric pneumonia. However, no publications have performed a bibliometric analysis of pneumonia in children to identify trends. This research was conducted to uncover answers to the following questions: 1) What trends can be identified in publications regarding pneumonia in children?; 2) What is the trend in the number of citations related to pneumonia in children?; 3) How is network visualization related to pneumonia in children?; 4) How is overlay visualization on pneumonia in children?; 5) What is density visualization on pneumonia in children?

Analyses of distribution literature genres, source journals, citations, co-authorship network ana-

lyses, and text mining can assist academics in better understanding relevant fields through bibliometric research (Zhang et al., 2021). Jackson et al. (2013) conducted studies regarding various risk factors for pneumonia in children. Still, there has been no review of bibliometric analyses of published literature assessing risk factors and pneumonia in children. A bibliometric analysis is a statistical research approach that visualizes academic institutions' contributions and changes in research hotspots (Fu et al., 2023). Bibliometric analysis, using visualization tools, assists researchers in identifying new regions and future directions concerning the study topic (Lam et al., 2022).

## Methods

Bibliometric analysis is more suitable for quantitatively analyzing the distribution of research papers, terms, and keywords when determining research trends (Murugesu et al., 2022). In addition, it is a research method used in library and information science to evaluate research performance (Syros et al., 2022). Bibliometric analysis is essential in assessing the impact of research wherein studies are ranked based on citations received (Pahwa et al., 2022).

The data at the center of the bibliometric analysis is typically expansive (hundreds, if not thousands) and objective in nature (e.g., number of citations and publications, occurrences of key-

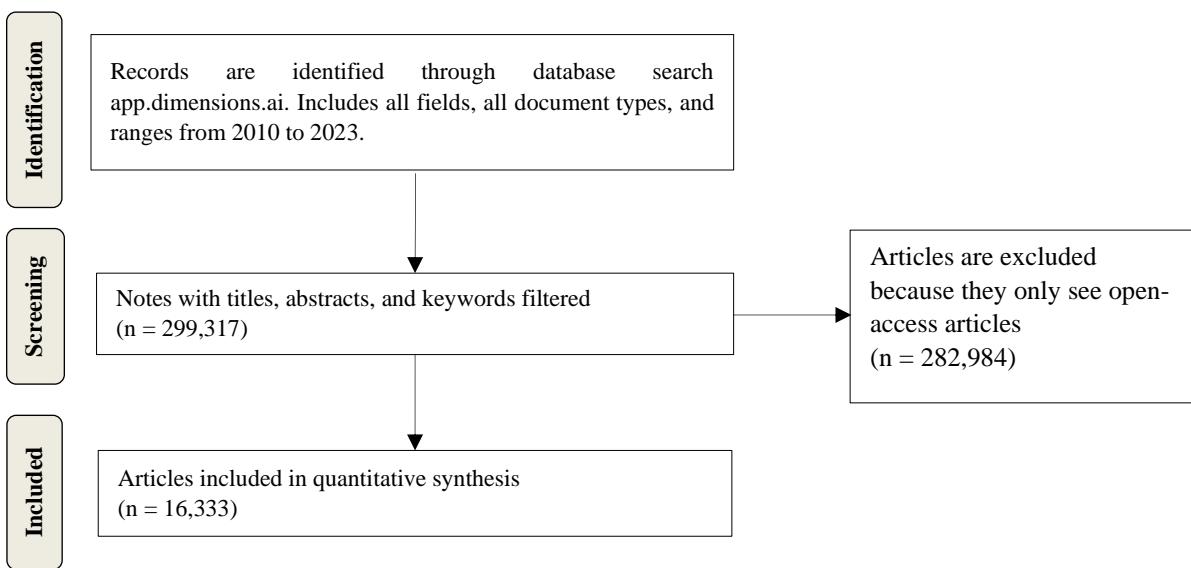


Figure 3. PRISMA Flowchart

words and topics), but its interpretations frequently rely on both objective (e.g., performance analysis) and subjective (e.g., thematic analysis) evaluations established through informed techniques and procedures (Donthu et al., 2021). However, other research approaches are also included so that the reader can get a primary picture and understand the basics of the leader on several factors. Notably, the researcher believed that the number of articles denotes production, whereas the total number of citations reflects the effect of the analysis (Sikandar & Kohar, 2022).

The data used in the study was based on online searches using <https://app.dimensions.ai/>. This database provides various scientific literature resources, such as journal articles, books, and conference records. Dimensions spans many fields and is well-known for its robust data analysis and visualization capabilities. This database intends to provide a comprehensive and integrated resource for academics in numerous areas. Data was retrieved on May 29, 2023.

The study approach is a literature review (Nursalam et al., 2020) with steps that follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart

(Page et al., 2021). The stages in PRISMA include identification, screening, and inclusion, as shown in Figure 3. Phase 1, identification, detected 299,317 records from dimensions.ai, accounting for each significant search term, including "pneumonia in children," "article document type and proceedings," and "all published data in the data range from 2010 to 2023". In phase 2, screening, the option "article title, abstract" was selected for each search term, so 282,984 notes were issued. In phase 3, inclusion, the final sample produced 16,333 articles, both open and non-open access.

The data was analyzed using VOSviewer version 1.6.18. VOSviewer is a computer program for creating and viewing bibliometric maps (Westby, 2021). Similarity Matrix was used to apply the visualization of similarities (VOS) mapping approach to produce a map reflecting the similarity measure between items, and translation, rotation, and reflection were used to rectify the optimization problem outlined in the literature. Regarding visualization capabilities, this software offers three options: overlay, network, and density (Moral-muñoz et al., 2020).

In this study, the analysis was reviewed based on co-occurrence and co-author. The following

is the process for analyzing co-occurrence. The data source that was chosen reads data from the references within the manager files. The title and abstract fields have been selected as the fields from which terms will be retrieved. Complete counting was used as the counting method. The threshold specified for the minimum number of term occurrences is ten. The number of phrases selected is 291.

## Results

### Analysis of the Number of Article Publications.

Searches from 2010 to 2023 yielded

16,333 scientific article publications. The number of publications on pneumonia in children per year from 2010 to 2023 is presented in Figure 4. The highest increase occurred in 2020, with a rise of 2,739 publications. The lowest increase occurred in 2023, with an increase of 564.

**Citation Analysis.** The number of citations regarding pneumonia in children per year from 2010 to 2023 is presented in Figure 5. The highest increase occurred in 2021, with an increase of 86,719. The lowest increase occurred in 2010, with an increase of 474.

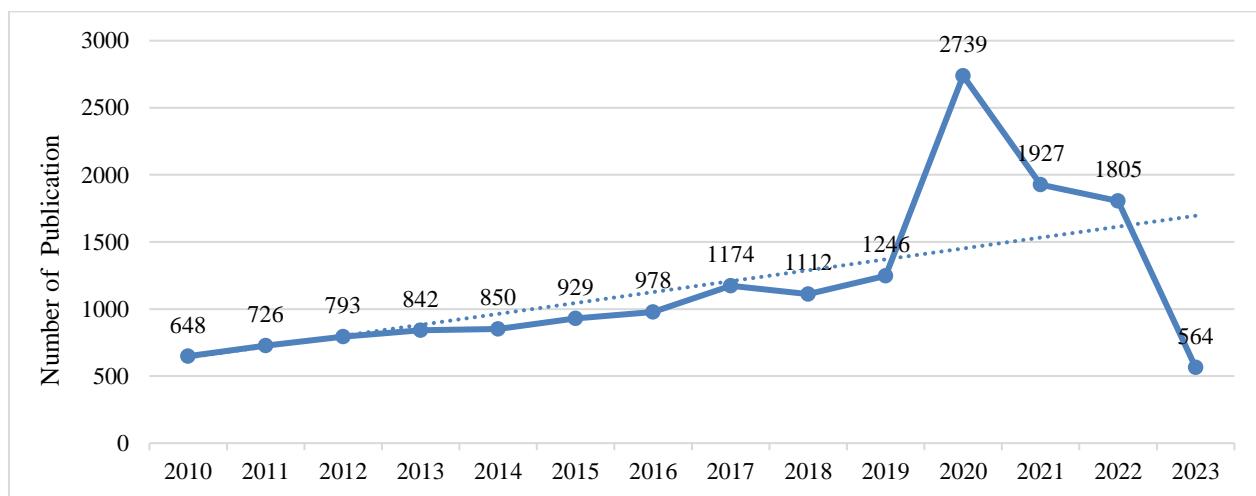


Figure 4. Number of Publications on Pneumonia in Children from 2010 to 2023

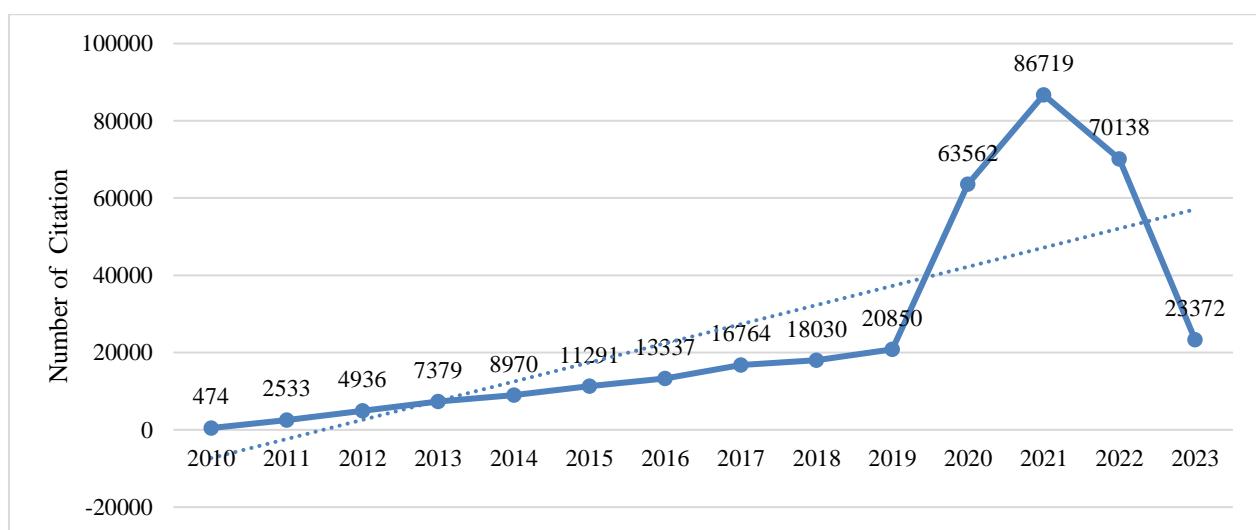


Figure 5. Number of Citations for the Topic of Pneumonia in Children from 2010 to 2023

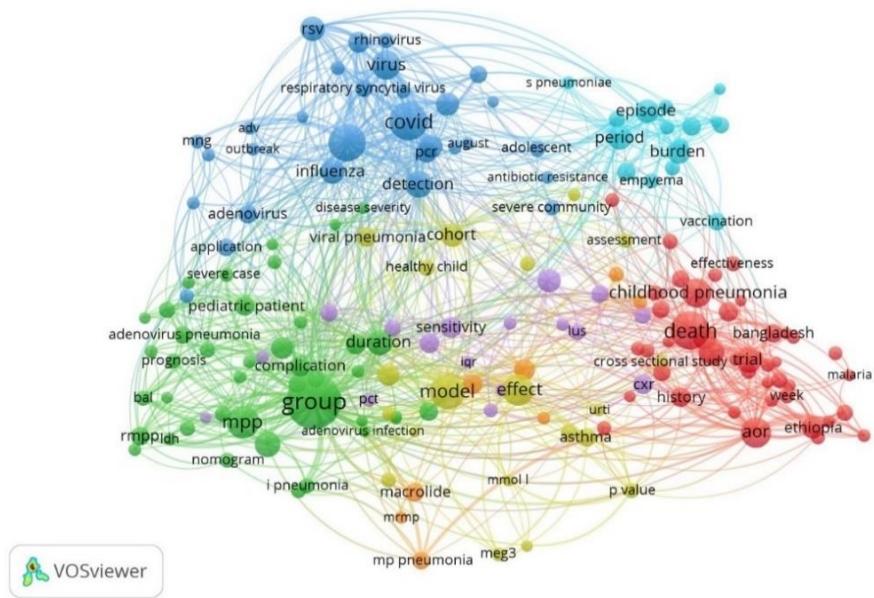


Figure 6. Network Visualization

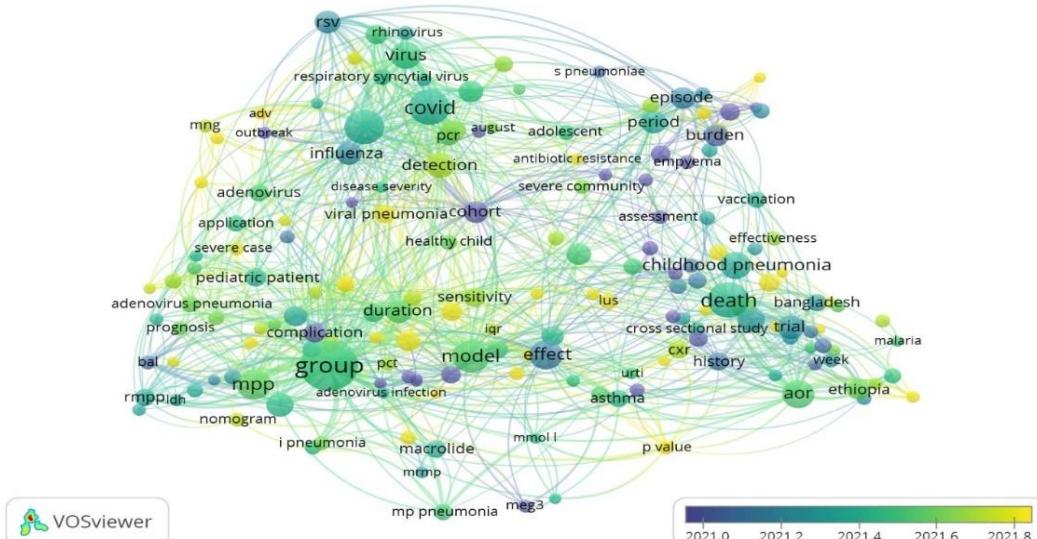


Figure 7. Overlay Visualization

**Network Analytics.** The selection of the number of terms was 291. The network visualization of these 291 terms is presented in Figure 6. Two items connected by a line indicate they appear together in a title and abstract. Conversely, two items not connected by a line indicate that they do not appear together in the title and abstract. Figure 6 shows 175 items, 7 clusters, 483 links, and a link strength 33,216.

**Overlay Analysis.** The VOS viewer also provides overlay visualization maps. The overlay visualization of these 291 terms is presented in Figure 7. Overlay visualization offers an analysis based on "pneumonia in children" from 2010 to 2023 to observe trends in research titles related to pneumonia in children. The yellow node on the map overlay representation in Figure 7 indicates that the keyword is of current research

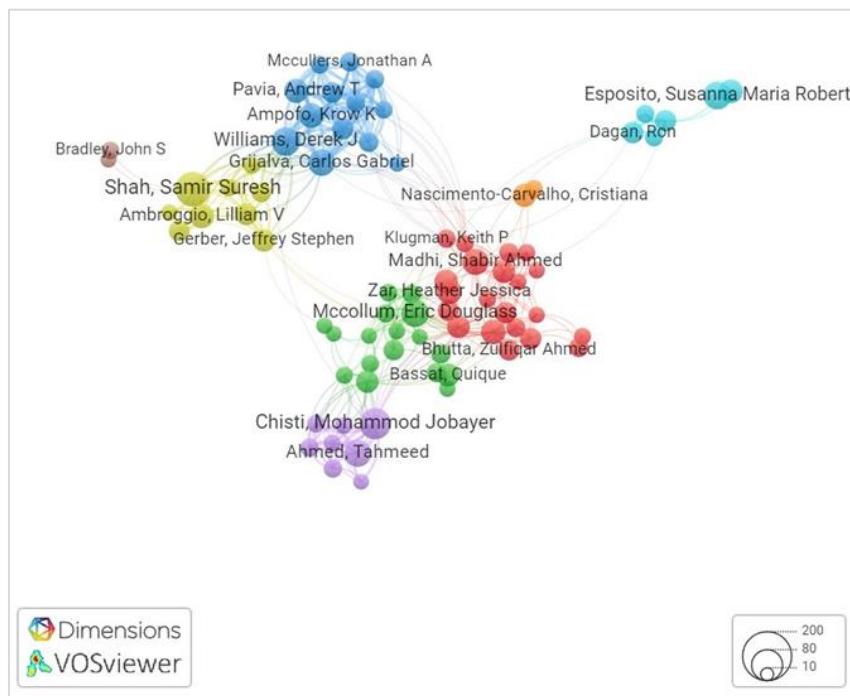


Figure 8. Density Visualization

interest. For example, current research trends in childhood pneumonia are centered on viral pneumonia.

**Density Visualization Analysis.** The density visualization of these 291 terms is presented in Figure 8. Figure 8 provides a density visualization, with many items widely contained in several items, including COVID-19. Some items with yellow knots mean that they have been widely discussed in previous journal publications. Thus, the recommended research topics related to pneumonia in children are topics that have density visualization in the low category, such as viral pneumonia.

**Network Visualization Analysis for Co-Authors.** Network visualization for co-authors is presented in Figure 9. Based on co-authorship data, Figure 9 depicts a collaboration map among lead authors. During the investigated period (2010-2023), the writers driving this theme are associated with the visualization network group, indicating a specific dispersion in author affiliations based on co-authorship approaches. There are 78 researchers, 388 link co-author-

ships, 3,853 total co-authorships, and 7 clusters in network visualization.

A bibliometric analysis has been applied to examine the topic of pneumonia in children. The study shows that from 2010 to 2023, the lowest number of publications about pneumonia in children was in 2023, with 564 publications, and the highest number of publications about pneumonia in children was in 2020, with 2,739 publications, indicating an average of 1,167 (Figure 10). Meanwhile, the lowest increase in the number of citations concerning pneumonia in children occurred in 2010, with 474 citations, and the most significant number of citations occurred in 2021, with 86,719 and an average of 24,882.5 (Figure 11). The number of publications and citations has increased exponentially year by year.

There are 175 items, 7 clusters, 483 links, and a link strength 33,216. Cluster 1 (42 items), cluster 2 (42 items), cluster 3 (30 items), cluster 4 (20 items), cluster 5 (27 items), cluster 6 (16 items), cluster 7 (8 items). In more detail, these clusters are presented in Table 1.

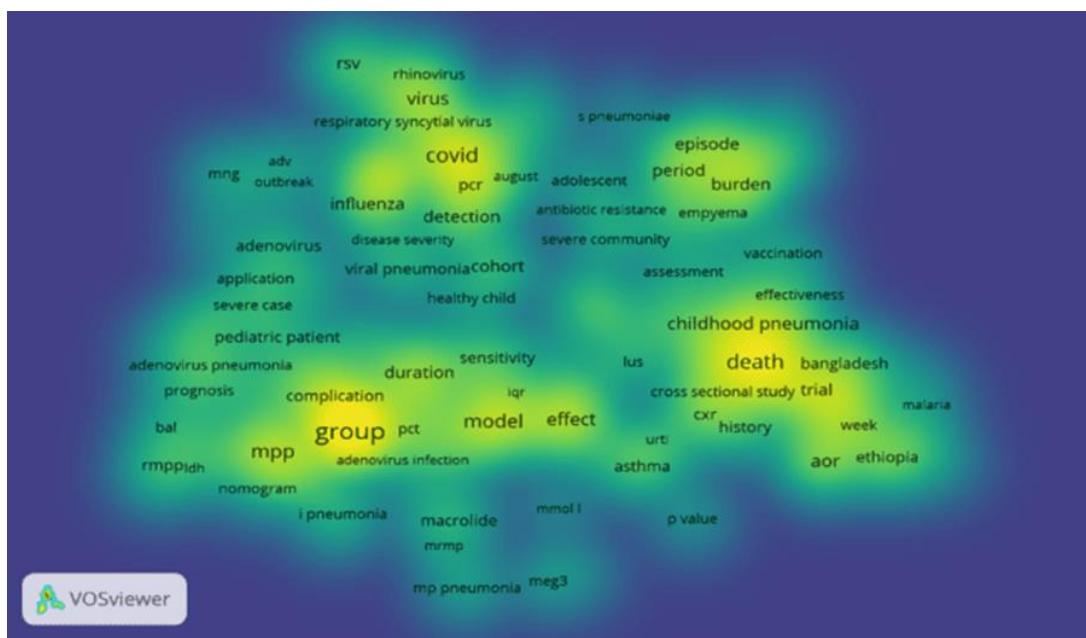


Figure 9. Network Visualization for Co-Authors

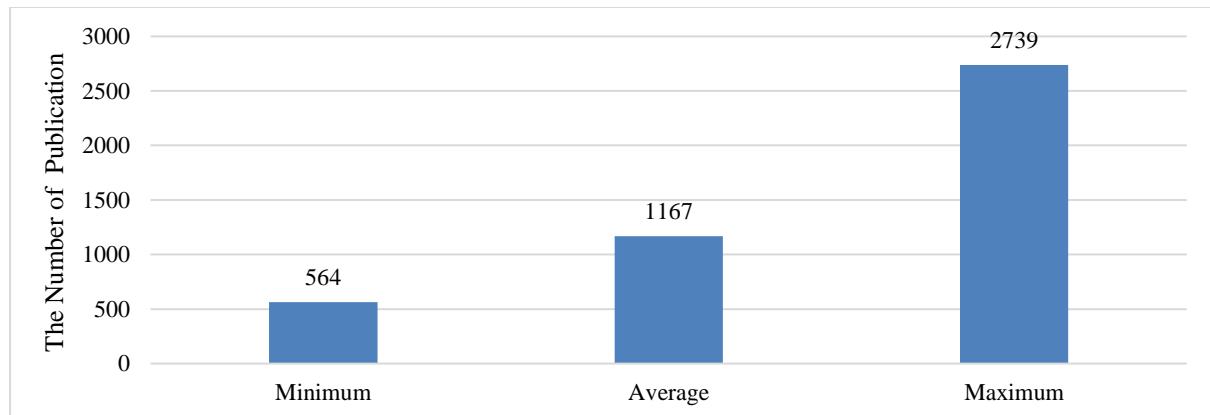


Figure 10. Histogram of the Smallest, Average, and Highest Increase in the Number of Publications on the Topic of Pneumonia in Children (2010-2023)

## Discussion

The number of articles about pneumonia in children reached 1,167 in 2020, with an average of 1,167 (Figure 10). The number of publications increased significantly each year due to the COVID-19 pandemic in 2020. Amid the COVID-19 outbreak, the number of youths suffering from severe and critical illnesses was low. However, younger children and children with comorbidities should be treated with caution.

According to Chaiyakulsil et al. (2022), children under the age of one year, as well as children with comorbidities, had a higher risk of pneumonia (adjusted odds ratio 2.99; 95% confidence interval [CI]: 1.56-5.74 and 2.32; 95% CI: 1.15-4.67), respectively. In children with COVID-19, younger age, increased High Sensitivity C-Reactive Protein (hs-CRP), and pneumonia are independent risk factors for symptomatic infection (Lu et al., 2020). Since 2012, the World Health Organization (WHO) has recommended that pneumococcal conjugate vac-

cines (PCV) be included in pediatric immunization programs worldwide to prevent streptococcus pneumoniae infection. Currently, three PCVs are approved for use: 7-valent PCV (PCV7), conjugate protein D conjugate vaccination Haemophilus influenzae protein D (PHiD) pneumococcal 10-valent-CV, and 13-valent PCV (PCV 13) (Bhavsar et al., 2022).

Meanwhile, the increase in the number of citations of pneumonia in minor children occurred in 2010 and was the highest in 2021, with an average of 24,882.5 (Figure 11). The number of citations has also increased exponentially from year to year. The most cited article was entitled

"The Epidemiology and Pathogenesis of COVID-19 Outbreak" (Rothan & Byrareddy, 2020), followed by an article entitled "Epidemiology of COVID-19 Among Children in China" (Dong et al., 2020), with 3,161 citations. It is commonly cited because this article comprehensively highlights the symptoms of COVID-19, epidemiology, transmission, pathogenesis, phylogenetic analysis, and future recommendations to control the spread of this deadly COVID-19 disease (Rothan & Byrareddy, 2020).

In low- and middle-income countries, paramedic health workers play a significant role in detecting and treating pneumonia in children. Inward

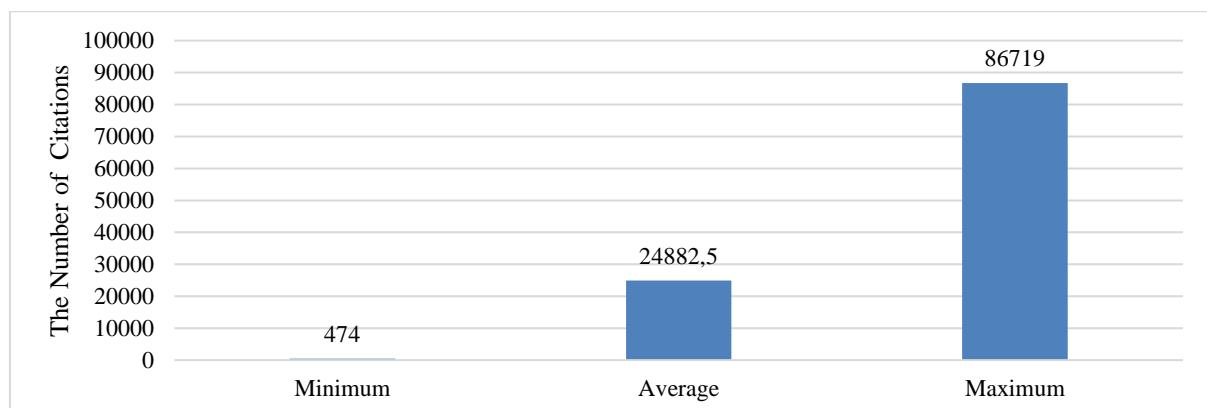


Figure 11. Histogram of the Smallest, Average, and Highest Increase in the Number of Citations for the Topic of Pneumonia in Children (2010-2023)

Table 1. Clusters for the Topic Pneumonia in Children

Cluster	The Number of Items	Cluster Member Items
1	42	Ten items include <b>anemia</b> , <b>childhood pneumonia</b> , comorbidity, health, meta-analysis, a <b>middle-income country</b> , sepsis, <b>pulse oximeter</b> , prevention, and hypoxemia.
2	42	Five items include HAdV pneumonia, <b>pneumonia</b> , <b>independent risk factor</b> , pediatric patient, refractory mycoplasma pneumoniae pneumonia (RMPP)
3	30	Five items include <b>COVID-19</b> , <b>influenza</b> , <b>pediatric population</b> , <b>streptococcus pneumonia</b> , and virus.
4	20	Five items include <b>clinical symptoms</b> , <b>healthy child</b> , <b>viral pneumonia</b> , inflammation, and subject.
5	27	Five items include <b>bacterial pneumonia</b> , clinician, oxygen saturation, pct, and sensitivity.
6	16	Five items include <b>cause pneumonia</b> , empyema, <b>invasive pneumococcal</b> , <b>s pneumoniae</b> , and vaccination.
7	8	Five items include <b>efficacy</b> , <b>M.P. pneumonia</b> , <b>mycoplasma pneumoniae</b> , MRMP, and hospital admission.

chest withdrawal is a critical diagnostic for pneumonia diagnosis, as it indicates the severity of the disease (Khan et al., 2023). Pneumonia is the leading killer of toddlers compared to other diseases known to affect children. Pneumonia in children causes substantial mortality and morbidity among children under five, with developing countries carrying the highest burden of pneumonia (Seramo et al., 2022). Exclusive breastfeeding, increased vitamin A supplementation, early control of respiratory infections through effective hygiene promotion, ventilation strategies in healthy homes, and the promotion of methods to reduce indoor air pollution through affordable clean stoves will all be relevant interventions to reduce pneumonia in toddlers (Yadate et al., 2023).

Due to the research limitations, the database app.dimension.ai is experiencing periodic updates with new publications. As a result, the bibliometric analysis of pneumonia in children can be performed at various points during the year. This study focuses solely on analyzing data from app.dimension.ai articles. More research must be conducted to use a database to acquire more detailed information on pneumonia in children. Bibliometric analysis will uncover trends and novelties in childhood pneumonia research. This analysis will help researchers focus their research on understudied or critical topics.

Even though it has contributed to providing insight into the growth of pneumonia in children publications from 2010 to 2023 via app.dimension.ai, new publications are added to the app.dimension.ai database regularly. Further research should add other databases for a more comprehensive understanding of pneumonia in children.

## Conclusion

The study used app.dimension.ai to conduct a bibliometric analysis of pneumonia in children's publications from 2010 to 2023. This study examines pneumonia in children and global re-

search trends during the last 13 years (2010–2023). The most remarkable publication rise happened in 2020, with a 2,739-publication increase. Citations increased the most in 2021, with an increase of 86,719. With 3,680 citations, the article 'The epidemiology and pathogenesis of COVID-19 epidemic' is the most cited.

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## Self-Efficacy in Salt Consumption Among Patients Undergoing Hemodialysis

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### Abstract

Salt consumption restriction has many advantages in patients on hemodialysis (HD), but it is also very challenging for them. Self-efficacy is a crucial aspect of successful disease management. Factors related to self-efficacy have been evaluated in many countries. However, the different demographic characteristics in Indonesia may show different significant results. Understanding this problem may contribute to the development of nursing interventions and the patients' self-management ability while undergoing HD. Hence, the present study aimed to determine the factors associated with self-efficacy for restricting salt consumption among HD patients. Altogether, 98 HD patients participated in this cross-sectional study. The Self-efficacy for Restricting Dietary Sodium in Hemodialysis Scale questionnaire was completed to assess the patients' self-efficacy. Linear regression was performed to evaluate the relationship between self-efficacy and patient characteristics. The participants' mean age was  $50.11 \pm 1.29$  years and the mean self-efficacy score was  $73.56 \pm 14.85$ . Mostly, participants were male (60.2%), married (82.7%), and had hypertension (85.7%). Age ( $p = 0.000$ ;  $r = 0.384$ ), HD duration ( $p = 0.004$ ;  $r = -0.287$ ), and interdialytic weight gain (IDWG) ( $p = 0.008$ ;  $r = -0.267$ ) significantly correlated with self-efficacy for restricting salt consumption. These three variables determined 21% of the variance of self-efficacy among HD patients. The present study provides primary evidence that age, HD duration, and IDWG are associated with self-efficacy for restricting salt consumption among HD patients. Thus, nurses could develop innovative interventions to enhance the self-efficacy among patients with younger age, longer HD duration, and more IDWG.

**Keywords:** hemodialysis, salt consumption, self-efficacy

### Abstrak

**Efikasi Diri dalam Konsumsi Garam di Kalangan Pasien yang Menjalani Hemodialisis.** Pembatasan asupan garam pasien hemodialisis (HD) bermanfaat bagi kondisi kesehatan sekaligus menjadi tantangan tersendiri bagi pasien. Efikasi diri merupakan aspek mendasar dalam keberhasilan manajemen penyakit. Faktor yang berhubungan dengan efikasi diri sudah diteliti di negara-negara lain, akan tetapi, perbedaan karakteristik demografi di Indonesia dapat memperlihatkan perbedaan hasil. Pemahaman terkait masalah ini berkontribusi pada peningkatan intervensi keperawatan dan manajemen diri pasien. Oleh karena itu, tujuan penelitian ini untuk mengetahui faktor-faktor yang berhubungan dengan efikasi diri dalam membatasi asupan garam pada pasien hemodialisis. Penelitian ini menggunakan desain cross-sectional dengan melibatkan sebanyak 98 pasien. Kuesioner The self-efficacy for Restricting Dietary Sodium in Hemodialysis Scale digunakan untuk mengukur efikasi diri pasien. Regresi linear dilakukan untuk melihat hubungan antara efikasi diri dengan data demografi. Rata-rata usia partisipan adalah  $50,11 \pm 1,29$  tahun dengan rata-rata skor efikasi diri pasien adalah  $73,56 \pm 14,85$ . Sebagian besar partisipan adalah laki-laki (60,2%), sudah menikah (82,7%), dan memiliki hipertensi (85,7%). Ditemukan bahwa usia ( $p = 0,000$ ;  $r = 0,384$ ), durasi hemodialisis ( $p = 0,004$ ;  $r = -0,287$ ), dan IDWG ( $p = 0,008$ ;  $r = -0,267$ ) berhubungan signifikan dengan efikasi diri dalam membatasi asupan garam. Ketiga variabel tersebut berkontribusi sebesar 21% terhadap variansi efikasi diri pasien hemodialisis. Penelitian ini membuktikan bahwa usia, durasi hemodialisis, dan IDWG berhubungan dengan efikasi diri pembatasan asupan garam pasien hemodialisis. Oleh karena itu, perawat dapat mengembangkan intervensi peningkatan efikasi diri pada pasien dengan usia muda, pasien yang telah lama menjalani HD, dan pasien dengan IDWG lebih.

**Kata Kunci:** asupan garam, efikasi diri, hemodialisis

## Introduction

Chronic kidney disease (CKD) is caused by an injury or abnormality of the kidney structure or function lasting for  $\geq 3$  months and/or reduced glomerular filtration rate (GFR) (National Institute for Health and Care Excellence [NICE], 2014; Kidney Health Australia [KHA], 2015). Meanwhile, according to the National Institute of Diabetes and Digestive and Kidney Disease (NIDDK) (2014), CKD is a progressive chronic disease characterized by a decrease in eGFR of  $< 60$  ml/minute/1.73 m<sup>2</sup> for a period of  $\geq 3$  months and/or kidney damage in the presence of persistent albuminuria (urine albumin of  $\geq 30$  mg) for  $\geq 3$  months. CKD can also cause kidney damage without a decrease in GFR for  $\geq 3$  months accompanied by albuminuria, hematuria, and structural and pathological abnormalities (KHA, 2015).

Patients with CKD or progressive kidney damage require treatment to improve kidney functioning, including continuous ambulatory peritoneal dialysis, kidney transplantation, and hemodialysis (HD) (Ministry of Health and Kidney Health New Zealand, 2014; NIDDK, 2015). HD is the most common therapy for patients with CKD (Bello et al., 2022).

Patients on HD have specific important rules, including dietary rules, that should be implemented as part of their routine. HD patients' dietary intake is different and their diet should be managed carefully, especially for salt or sodium daily consumption due to a decrease in renal function (NIDDK, 2015; Ministry of Health and Kidney Health New Zealand, 2014). The restriction of salt consumption among HD patients has many advantages in terms of health outcomes, including decreased protein and albumin levels and cardiovascular disorders in patients (McMahon et al., 2015). Salt restriction for hypertension patients receiving diuretic therapy can also increase the effectiveness of treatment (Cobb & Pacitti, 2018).

Restricting salt consumption also contributes to

interdialytic weight gain (IDWG) control (NIDDK, 2014; University of Michigan Health System [UMHS], 2016). Previous studies have reported that uncontrolled IDWG was mostly experienced by HD patients and further, related to complications, increase the incidence of hospitalization and mortality (Cabrera et al., 2015; Lopez & Banarjee, 2021).

However, salt consumption restriction and management have become complicated challenges encountered by HD patients. The challenges for restricting salt consumption are related to many aspects, including food taste preferences, flavored food varieties, and inadequate knowledge (Meuleman et al., 2018; Sukartini et al., 2022). Another barrier is the patients' perception of insufficient support about the behavioral strategies related to fluid and dietary management (Ozkan & Taylan, 2022). Those many obstacles were experienced by patients with a lower self-efficacy (Meuleman et al., 2018). Therefore, self-efficacy is a crucial aspect of attaining successful disease management (Meuleman et al., 2018).

Self-efficacy plays an important role in controlling and readiness for dietary adherence behavior in HD patients (Clark-cutaia et al., 2014). Moreover, it has a huge impact on patients' self-management, self-care, psychological health, and quality of life (Almutary & Tayyib, 2021; Kav et al., 2017; Kiajamali et al., 2017; Nguyen et al., 2022; Warner & Schwarzer, 2020).

Multi-difficult challenges of HD patients to restrict salt consumption are a crucial aspect. The self-efficacy-related factors have been evaluated in many countries. A similar focus study in Indonesia with different eating habits and demographic characteristics may show a different significant result, especially in terms of salt consumption restriction. Understanding this problem may contribute to the development of nursing interventions and patients' self-management while on HD. Hence, the main purpose of this research was to determine the factors associated with self-efficacy for restricting salt con-

sumption among HD patients.

## Methods

We conducted a quantitative correlational study with a cross-sectional approach. The present study had been reviewed and authorized as appropriate by FK-KMK/Faculty of Medicine, Public Health, and Nursing ethic committee, Gadjah Mada University (Ref: KE/FK/0020/EC/2019). Altogether, 98 HD patients in a hospital in Yogyakarta, Indonesia, were recruited through purposive sampling with inclusion and exclusion criteria. Signed informed consent was obtained from all participants. The inclusion criteria were as follows: 1) patient undergoing HD for  $\geq 3$  months; 2) age of  $\geq 18$  years;

and 3) fluent in the Indonesian language. They were excluded if they: 1) were unable to write, read, or speak; 2) lost consciousness; and 3) had a psychotic disorder.

The Self-Efficacy for Restricting Dietary Sodium in Hemodialysis Scale is an instrument for measuring the self-efficacy score for restricting dietary sodium among HD patients introduced by Clark-cutaia et al. (2014). We have obtained permission from the instrument's developer to use this instrument. This questionnaire comprises 15 questions covering self-efficacy in the ability to follow a general HD diet, limiting consumption of fast food and high-salt diet, and limiting fluids. Self-efficacy scores using the Visual Numeric Scale (VNS) ranging from 0 to

Table 1. The Original Instruments and Translations

Original Instrument	Translation Instrument in Indonesia
<b>How confident are you that in the next month, you will be able to ...</b>	<b>Seberapa yakin anda bahwa dalam sebulan ke depan, anda dapat ...</b>
follow the dialysis diet in general?	mengikuti diet dialisis dengan baik?
control the amount of salt that you eat?	mengendalikan jumlah garam yang anda makan?
limit the number of fluids that you drink?	membatasi jumlah cairan yang anda minum?
avoid the amount of canned food that you eat?	menghindari makanan kalengan yang anda makan?
avoid adding table salt to your food?	menghindari menambahkan garam meja pada makanan anda?
limit the amount of processed meat (such as bacon and luncheon meat) that you eat?	membatasi jumlah daging olahan yang anda makan?
read food labels so that you know how much salt is in your food?	membaca label makanan sehingga anda mengetahui seberapa banyak garam yang ada dalam makanan anda?
limit the amount of weight that you gain from fluid between dialysis treatments?	membatasi kenaikan berat badan sebelum dan setelah hemodialisis?
limit salty snacks?	membatasi snack yang asin
limit the number of times each week you eat at fast food restaurants?	membatasi makan di restoran cepat saji setiap minggunya?
<b>How confident are you that in the next month, you can limit your salt intake when you are ...</b>	<b>Seberapa yakin anda bahwa dalam sebulan ke depan anda dapat membatasi asupan garam saat ...</b>
feeling blue or depressed?	merasa sedih atau depresi
experiencing a day when your appetite is poor?	mengalami hari di mana Anda tidak punya nafsu makan?
<b>How confident are you that in the next month, you can limit your salt intake on.....</b>	<b>Seberapa yakin Anda bahwa dalam sebulan ke depan anda dapat membatasi asupan garam pada saat ...</b>
dialysis treatment days?	perawatan cuci darah?
weekdays when you have no dialysis treatments?	hari kerja saat Anda tidak melakukan cuci darah?
weekend days when you have no dialysis treatments?	akhir pekan ketika Anda tidak melakukan cuci darah?

100 with the addition of 10 points, with 0 indicating not confident and 100 indicating very confident. The score is calculated based on the average on each subscale/factor I, II, and III. Then, we determined the final score, which is the average of the scores of each subscale, with greater score indicating a higher self-efficacy for restricting salt consumption (Clark-cutaia et al., 2014).

All participants completed the Self-efficacy for Restricting Dietary Sodium in Hemodialysis Scale questionnaire developed by Clark-cutaia et al. (2014). The Indonesian version of the instrument was adapted in this study. This instrument has been translated into Indonesian through two language institutions by a sworn translator. The original instruments and translations can be seen in Table 1. The process was continued by conducting validity tests by experts and pilot testing on HD patients. For the content validity test of the instrument, four experts, including kidney and hypertension consultants, HD nurses, and nutritionists, were involved. Then, the instrument was tested on 45 HD patients. The validity and reliability tests

showed good results with S-CVI of 0.90, I-CVI of 0.80, and overall Cronbach  $\alpha$  of 0.88 (0.74, 0.88, and 0.67 for factors I, II, and III, respectively). Independent t-test, Pearson correlation, and linear regression were performed to analyze the relationship between self-efficacy and patient characteristics. Data collection involved a research assistant who reads the questionnaire to the patients and the patient stated a score based on their condition. This method was performed due to the limited hand movement of the patient during HD. The process of filling out this questionnaire took approximately 5 minutes.

## Results

Altogether, 98 patients (male n = 59; 60.2%; female n = 39; 39.8%), with a mean age of  $50.11 \pm 1.29$  years participated in this study. Eighty-one patients were married (82.7%) and 17 were single (17.3%). The mean HD duration was  $3.38 \pm 3.36$  with the common cause of HD being hypertension (n = 61; 62.2%) and diabetes mellitus (DM) (n = 32; 32.7%). Most of the patients undergo HD therapy twice a week

Table 2. Characteristics of the Study Participants

Respondent Characteristics		n	%	Mean $\pm$ SD
Sex	Male	59	60.2	$50.11 \pm 1.29$
	Female	39	39.8	
Age (years)				
Medical History	Hypertension	61	62.2	$3.38 \pm 3.36$
	Nonhypertension	37	37.8	
	DM	32	32.7	
	Non-DM	66	67.3	
Duration undergoing Hemodialysis (years)				
Hemodialysis Frequency	1x/ week	3	3.1	$2.64 \pm 2.40$
	2x/ week	95	96.9	
Educational Status	Primary-high school	70	71.4	
	College	28	28.6	
Occupation	Not working/ retired	61	62.2	
	Working	37	37.8	
Marital Status	Single	17	17.3	
	Married	81	82.7	
Blood Pressure	Normal	14	14.3	
	Hypertension	84	85.7	
IDWG (kg)				

Table 3. Correlation Between the Score of Self-Efficacy for Restricting Salt Consumption Using the Self-Efficacy for Restricting Dietary Sodium in Hemodialysis Scale and Participants' Characteristics

Respondent Characteristics		Self-efficacy score (Mean $\pm$ SD)	p	r
Sex <sup>a</sup>	Male	72.23 $\pm$ 14.96	0.278	
	Female	75.57 $\pm$ 14.65		
Age <sup>b</sup>			0.000**	0.384
Medical History <sup>a</sup>	Hypertension	73.38 $\pm$ 14.40	0.882	
	Nonhypertension	73.84 $\pm$ 15.74		
	DM	73.05 $\pm$ 15.67		
	Non-DM	73.79 $\pm$ 14.55	0.817	
Duration Undergo Hemodialysis <sup>b</sup>			0.004**	-0.287
Hemodialysis Frequency <sup>a</sup>	1x/ week	67.81 $\pm$ 21.57	0.499	
	2x/ week	73.74 $\pm$ 14.72		
Educational Status <sup>a</sup>	Primary-high school	74.69 $\pm$ 15.28	0.230	
	College	70.69 $\pm$ 13.55		
Occupation <sup>a</sup>	Not working/ retired	75.04 $\pm$ 14.99	0.203	
	Working	71.09 $\pm$ 14.47		
Marital Status <sup>a</sup>	Single	70.79 $\pm$ 15.42	0.402	
	Married	74.13 $\pm$ 14.76		
Blood Pressure <sup>a</sup>	Normal	73.43 $\pm$ 17.63	0.973	
	Hypertension	73.57 $\pm$ 14.46		
IDWG <sup>b</sup>			0.008**	-0.267
Total		73.56 $\pm$ 14.85		

\*\*Correlation is significant at the 0.01 level (2-tailed); <sup>a</sup>Independent t-test; <sup>b</sup>Pearson Correlation

Table 4. Regression Analysis of Self-Efficacy, Age, Hemodialysis Duration, and IDWG

Independent variable	Dependent variable	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	Standard error	t	p
Age							
Duration undergoing hemodialysis	Self-efficacy for restricting salt consumption	0.211	0.186	8.376	8.054	8.187	0.000*
IDWG							

\* Correlation is significant at the 0.01 level (2-tailed)

(n = 95; 96.9%), whereas three (3.1%) received HD once a week. The highest educational level of most participants was primary high school (n = 70; 71.4%). Mostly, the participants were not working (n = 61; 62.2%); however, 37 participants (37.8%) were still working. During the study, most of the participants had hypertension (n = 84; 85.7%), whereas 14 (14.3%) had a normal blood pressure. The characteristics of the study participants are presented in Table 2.

As shown in Table 3, the participants' self-efficacy score specific to salt restriction was 73.56  $\pm$  14.85. The self-efficacy score of most parti-

cipants were > 70. Contrarily, the self-efficacy score was < 70.00 in the participants on HD once a week (67.81  $\pm$  21.57). In the bivariate analysis, age (r = 0.384), HD duration (r = -0.287), and IDWG (r = -0.267) were found to be significantly correlated with self-efficacy. Moreover, the participants' self-efficacy scores specific to restricting salt consumption was not significantly different among the patients stratified by sex, medical history, HD frequency, educational status, occupation, marital status, and blood pressure. However, a significant correlation was noted between the participants' self-efficacy scores specific to restricting salt

consumption and age, HD duration, and IDWG ( $p = 0.000$ ;  $0.004$ ; and  $0.008$ ).

Moreover, a multivariate analysis was performed to analyze the relationship between self-efficacy and patient characteristics. Age, HD duration, and IDWG were found to contribute to self-efficacy for restricting salt consumption by approximately 21% (Table 4). A positive  $r$  value indicates a positive correlation, whereas a negative  $r$  value indicates a negative correlation between variables. The present study found a positive correlation between age and self-efficacy for restricting salt consumption, indicating that the older their age, the higher the patients' self-efficacy for restricting salt consumption. Contrarily, HD duration and IDWG showed a negative correlation with self-efficacy for restricting salt consumption, indicating that the longer the HD duration and the higher the IDWG, the poorer the patient's self-efficacy for restricting salt consumption.

## Discussion

Overall, HD patients who participated in this study had a mean self-efficacy score of relatively moderate, which was different from the finding of a previous study conducted in Pennsylvania, which reported a high level of self-efficacy score for restricting salt consumption (Hu et al., 2019). This self-efficacy score was still not optimal as compared with those of the other studies, which is probably related to several things, including the number of high-sodium fast food intake and cultural habit of consuming tasteful foods (Biruete et al., 2017; Sakir et al., 2024). There was also no practical guidance and strategies for restricting salt consumption among HD patients (Meuleman et al., 2018). Contrarily, people in developed countries already have a habit of limiting salt consumption because of government support in terms of policy (World Health Organization [WHO], 2020).

Our study findings showed that age has a positive correlation with self-efficacy, which means that older patients have better self-efficacy for

restricting salt consumption due to the different lifestyles among patients. In line with the results of a previous study, younger people had higher sodium intake and showed lower self-efficacy in their ability to restrict dietary sodium (Clark-cutaia et al., 2014; Nerbass et al., 2014). Another study also demonstrated that younger patients lacked goal setting and strategies to limit salt consumption, especially because of their "eating out" habit (Meuleman et al., 2018). Contrarily, older patients had lower salt consumption and lower IDWG, reported fewer problems, and also had better self-efficacy for restricting salt consumption (Clark-cutaia et al., 2014).

IDWG was found to be significantly correlated with self-efficacy for restricting salt consumption. Self-efficacy, known as a perceived ability, contributes to the success of developing self-management behaviors, including medication adherence and dietary regulation compliance, among patients (Wild et al., 2017). However, in the present study, the participants' self-efficacy score specific for restricting salt consumption was lower than that of developed countries. Salt consumption can cause an increase in plasma osmolality, resulting in thirst and increased fluid consumption and impacting IDWG (Colson et al., 2018). Patients with more IDWG had lower self-efficacy for restricting dietary sodium (Clark-cutaia et al., 2014). The present study shows that the HD duration was negatively correlated with self-efficacy. Having a machine-dependent life may significantly influence the daily lifestyle of patients, and long-term treatment might increase their stress levels (Tu et al., 2014).

Moreover, the results of the multivariate analysis showed that age, HD duration, and IDWG contribute to self-efficacy for restricting salt consumption by approximately 21%. Self-efficacy is a set of self-beliefs in their action to meet specific goals and also in-between knowledge and self-care (Bandura, 2018; Wu et al., 2016). Enhancing self-efficacy has many advantages for improving the health outcomes of

patients with chronic disease (Cutler et al., 2018; Fors et al., 2018; Willis, 2016). However, each patient has a unique background, which should be considered when exploring strategies to enhance self-efficacy (Farley, 2019). Nurses, which are among the patients' support systems, have an important role in developing an appropriate approach for enhancing self-efficacy among HD patients with younger age, longer HD duration, and more IDWG. However, further research is needed in the future to identify and include additional variables that might better explain patient self-efficacy. This could involve qualitative studies to uncover new factors or expand the scope of quantitative studies to include a broader range of potential predictors.

Self-efficacy for restricting salt consumption is associated with various factors, including knowledge of the health risks associated with high salt consumption, social support, access to low-salt food options, and personal habits (Alhazmi et al., 2024). Individuals well-informed about the dangers of excessive salt consumption and who have received strong support from family and peers are more likely to feel confident that they can successfully reduce their salt consumption. Additionally, access to healthier food choices and learning from past experiences can enhance one's self-efficacy. Motivation and commitment to personal health also play a crucial role, making tailored interventions that address these factors essential to ensure successful reduction of salt consumption.

Contrarily, no significant relationship was observed between sex, health history, frequency of HD therapies, educational status, employment, marital status, and blood pressure and self-efficacy for limiting salt consumption among HD patients. It may be due to the complex and multifactorial nature of self-efficacy. Contrarily, previous research has shown that reduced salt consumption among dialysis patients was associated with meal preparations at home (Uchida et al., 2024). According to Bandura's Social Cognitive Theory, self-efficacy is formed by the interaction of personal

experience, social modeling, and verbal persuasion (Bandura, 1997). This may be the reason for the lack of association between some demographic characteristics and self-efficacy for limiting salt consumption. The study data showed that there were more male respondents than female respondents. Based on the data obtained from the Ministry of Health Republic Indonesia (2017), the prevalence of CKD is 0.1% greater in men, with smoking considered as the related factor of progressive damage of the glomeruli. This finding is closely related to the results showing that cardiovascular function exacerbates kidney damage (International Society of Nephrology [ISN], 2017). Besides that, alcohol drinking habits can also affect the function of the kidneys, especially in fluid and electrolyte regulation, and disruption of hormone regulation by the kidneys (Koning et al., 2015).

The respondents' mean age in the present study was approximately 50 years. In line with these results, aging was related to a higher risk of CKD development due to a decrease in GFR each year (Indonesian Renal Registry [IRR], 2017). Increasing age also causes the decrease of the muscle mass of the kidneys, affecting both kidney structure and function, causing CKD, and further requiring HD therapy (Ortiz et al., 2022).

Most of the respondents had hypertension and DM, which are considered as comorbidities or positive medical history. Additionally, hypertension and DM are the risk factors for CKD (Ghaderian & Beladi-Mousav, 2014). This is also in accordance with IRR data (2017) showing that approximately 51% and 21% of CKD patients have hypertension and DM, respectively. A greater number of CKD patients experience hypertension after CKD diagnosis as compared to the number of patients with CKD due to hypertension, whereas DM is mostly the cause or medical history of CKD (Chang et al., 2016). The large number of HD patients with hypertension and DM can be due to the progressive kidney damage caused by the disturbances in the renin–angiotensin–aldosterone

system, which is also related to blood pressure regulation (Pugh et al., 2019). Hypertension in CKD patients is often referred to as resistant hypertension because patients require more than one anti-hypertensive drug and the blood pressure can still increase when the patients experience hypervolemia (Fay & Cohen, 2021). The present study shows that the respondents' mean IDWG was  $> 2.5$  kg, which could be caused by low adherence of patients to fluid restriction, thirst, and self-efficacy (Wahyuni et al., 2019). Compliance with fluid restriction and thirst are related to salt consumption, which can cause an increase in plasma osmolality resulting in increased thirst, fluid consumption, and IDWG (Colson et al., 2018).

The educational level of most respondents was primary high school. In Indonesia, most HD patients have a low educational level or do not go to school (Liu et al., 2021). In other studies, most HD patients have secondary to tertiary educational levels (Jansen et al., 2014; Jenssen et al., 2015; Kiajamali et al., 2017). This situation indicates that a higher educational level will impact patient literacy and awareness of related diseases and decision-making about health (Jenssen et al., 2015).

The disease condition requires HD patients to actively manage the disease and choose an appropriate diet. Nurses who frequently meet patients are expected to be able to influence patients by providing education on managing patient salt consumption to influence their self-efficacy. To increase the level of self-efficacy among HD patients, the development of effective salt consumption restriction strategies needs to be developed, especially on younger patients, those with longer HD duration, and those with more IDWG. Actively reaching out to the family and social environment, such as identifying the person who cooks at home and providing nutritional/dietary guidance, is needed to enhance the reduction of salt consumption.

The limitation of this study is the possibility of bias in reporting patient self-efficacy. Hence,

further research needs to be supported by objective assessments, such as identifying the serum sodium level of the patients.

## Conclusion

Our study provides primary evidence that age, HD duration, and IDWG were associated with patients' self-efficacy for restricting salt consumption. Our study results suggest that nurses could promote an appropriate approach to improve the self-efficacy of patients with younger age, longer HD duration, and more IDWG. It is necessary to perform further research in this area and develop innovative interventions for the patients to improve their self-efficacy by restricting salt consumption. Moreover, a randomized controlled trial study is needed to generate useful interventions for evidence-based practice, especially for restricting salt consumption in HD patients.

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## **Self-Management: A New Eight-Minute Stretching Program for Employees with Musculoskeletal Disorders (MSDs)**

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### **Abstract**

Musculoskeletal disorders (MSDs) are the main cause of workplace injuries. MSDs are health problems that attack the body's propulsion systems, such as muscles, tendons, ligaments, joints, cartilage, and nerves. This study aims to determine the effectiveness of Self-Management: A New Eight-Minute Stretching Program against MSDs in a company X, Tangerang, Indonesia. A quantitative, quasi-experimental research method using a non-equivalent control group pre-test-post-test design was conducted on 90 respondents, who were divided into two sample groups by using side probability with a simple random sampling technique. The MSD risk measurement instrument used the Nordic Musculoskeletal Questionnaire. The results obtained showed that the majority of respondents were adults (51.3%), male (67.2%), and had more than three years of working experience (43.7%). The results of a Mann-Whitney U test found that there were differences in the level of complaints about MSDs between the intervention group and the control group ( $p = 0.00$ ). However, using Wilcoxon, there were differences in complaints about MSDs during the pre-test and post-tests ( $p = 0.00$ ). Based on the research results, it is suggested that every company provide continuous education to employees so that they can implement this program independently while working or at home. This prevention can reduce complaints of MSDs, so that, together with reduced complaints, the quality of health will improve.

**Keywords:** effectiveness, employees, musculoskeletal disorders

### **Abstrak**

**Manajemen Diri: A New Eight-Minute Stretching Program terhadap Musculoskeletal Disorders (MSDs) pada Karyawan.** Musculoskeletal disorder (MSDs) merupakan penyebab utama kecelakaan di tempat kerja. MSDs adalah masalah kesehatan yang menyerang sistem alat penggerak tubuh, seperti otot, tendon, ligamen, sendi, kartilago dan saraf. Penelitian ini bertujuan untuk mengetahui efektivitas Manajemen Diri: A New Eight Minute Stretching Program terhadap Musculoskeletal Disorders (MSDs) pada karyawan di perusahaan X, Tangerang, Indonesia. Penelitian ini menggunakan desain kuantitatif dengan metode quasi-experimental menggunakan non-equivalent control group pre-test-post-test design terhadap 90 responden yang terbagi menjadi dua kelompok sampel. Pengambilan sampel menggunakan side probability dengan teknik simple random sampling. Instrumen pengukuran risiko MSDs menggunakan kuesioner the Nordic Musculoskeletal. Hasilnya didapatkan mayoritas responden berusia dewasa (51,3%), laki-laki (67,2%), lama kerja lebih dari tiga tahun (43,7%). Hasil dari uji Mann Whitney ditemukan perbedaan tingkat keluhan MSDs antara kelompok intervensi dan kelompok kontrol ( $p = 0,00$ ); sedangkan dengan menggunakan uji Wilcoxon ditemukan perbedaan keluhan MSDs saat pre-test dan post-test ( $p = 0,00$ ). Berdasarkan hasil penelitian disarankan setiap perusahaan memberikan edukasi pada karyawan secara kontinu untuk menerapkan program ini secara mandiri saat bekerja ataupun di rumah. Program ini dapat mengurangi keluhan MSDs, seiring dengan berkurangnya keluhan tersebut maka kualitas kesehatan akan meningkat.

**Kata Kunci:** efektivitas, karyawan, musculoskeletal disorders

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## **Introduction**

Musculoskeletal disorders (MSDs) are the main causes of injuries and disabilities in the work-

place. The World Health Organization (WHO) defines MSDs as disorders or health problems that attack the body's propulsion systems, such as muscles, tendons, ligaments, joints, cartilage,

and nerves (Soylar & Ozer, 2018). A MSDs is an injury or pathological disorder that disrupts the normal functioning of the soft tissues in the musculoskeletal system. MSDs occur when the soft tissues experience stress or injury that occurs continuously, repeatedly, and gradually so that eventually the soft tissues will be damaged (Shuai et al., 2014).

According to WHO data, the incidence of MSDs is estimated to account for 60% of all work-related illnesses. As of 2014, the rate of cases of MSDs in male employees was 37.5 per 10,000, compared to the female employees' rate of 29.7 per 10,000 (Joshipura et al., 2014). MSDs occur in the US due to various activities or types of work. In 2015, the incidence of MSDs was recorded at 29.8 cases per 10,000 workers, 80 of whom were in the industrial sector. The recovery period for this illness was around 12 days, and the impact on companies caused increased treatment costs for workers (Joshipura et al., 2014).

Based on a report of the European Commission (2014), cases of MSDs cause 49.9% of absences from work (unable to work for more than three days), and 60% of cases of permanent disability at work. In 2010, 22,013 cases of occupational disease were reported in Argentina, with MSDs being the most common occurrence. MSDs in Korea experienced a very high increase, from 1,634 in 2001 to 4,502 in 2010 (Hutting et al., 2019). According to Seeberg et al. (2019), the annual cost of MSD cases reaches up to USD 1 trillion per year. Among employees, MSDs are an economic burden that must be borne by the government, especially in the healthcare system (Seeberg et al., 2019).

According to a report by the International Labor Organization (ILO), of the nearly 160 million work-related disorders occurring around the world annually, MSDs are the second most common occupational disease (Nuraydin et al., 2018). MSDs have been defined as inflammatory and degenerative conditions that affect muscles, tendons, ligaments, joints, peripheral

nerves, and supportive structures, such as intervertebral discs (Davey et al., 2019). These problems comprise a wide variety of disorders, including those that differ in intensity and symptoms and can result in mild and moderate symptoms or chronic and disabling conditions (Labao et al., 2018).

Tangerang, one of the supporting cities for the capital of Indonesia, has the country's largest number of industrial sectors. According to data from the administration of a company X, a well-known company engaged in the production of popular sports shoes (Adidas), the company currently employs 9,000 workers. The data results of the report show that the top 10 diseases or conditions that are handled and reported monthly by the company's clinic are myalgia, MSDs, pharyngitis, enteritis, bronchitis, cephalgia, conjunctivitis, hypertension, and hypotension, which the clinic's lab consultant associates with cholesterol, sugar, glyceride, and uric acid. MSDs are in second place, which means that the majority of sick worker visits are due to MSD cases.

Sustained MSDs will affect both the employees themselves and the company where they work. Hutting et al. (2019) recommended several strategies to deal with MSD problems, including providing policies for the health aspects of the company. These include providing healthy and balanced food, periodic health checkups (general checkup), the provision of rooms and sports facilities, stretching, healthy lifestyles, and so on. Apart from company policies, employees can implement self-management strategies to overcome MSDs (Hutting et al., 2019).

A self-management strategy is an intervention method to improve fitness and restore and improve the health of employees who have MSD problems or prevent the emergence of MSDs. Support from the company, training, and collaboration with therapists are needed. Self-management is a holistic approach that includes bio, psycho, social, and spiritual elements; this strategy is a long process that requires the active

empowerment of the employees concerned—who, in the end, will be equipped with the knowledge and skills to achieve these targets (Richardson et al., 2018).

A stretching program is the most effective strategy to prevent and rehabilitate musculoskeletal complaints, such as neck, shoulders, and lower back pain. Stretching exercises in the workplace have several benefits, including reducing muscle tension, increasing muscle tissue flexibility, reducing the risk of muscle injury (cramps), reducing the risk of back pain/injury, and optimizing daily activities (Van Eerd et al., 2016).

Research by Jatmika et al. (2022) revealed that there was a significant relationship with complaints of MSDs among laborers at Yos Sudarso Port, Tual City, Maluku Province, namely age ( $p = 0.000$ ), length of service ( $p = 0.000$ ), workload ( $p = 0.046$ ), and work posture ( $p = 0.008$ ). In this study, it was found that the age factor of having a work period longer than five years with a heavy workload, as well as awkward work postures, increased the risk of the occurrence of MSDs. Workplaces must pay attention to the maximum age limit for workers, and workers must use rest time as efficiently as possible when not working, such as by diligently stretching or exercising. The workplace must provide a safety briefing to workers before starting work regarding techniques for lifting goods, and workers should avoid lifting goods beyond their proper capacity.

Biomechanical, psychosocial, and individual characteristics are risk factors for MSDs. If such conditions develop unfavorably, they can cause chronic neck and back pain and lead to osteoarthritis and rheumatoid arthritis. MSDs, if not handled properly, will disrupt the health of these employees, such as decreasing their concentration power and causing fatigue, which can result in a loss of time at work (not present at work or unable to work). In the end, productivity decreases, which is likely to have an impact on the company in terms of profit (Pourahmadi et al., 2019).

It has been proven that a stretching program carried out before work can be beneficial in reducing MSDs, namely, by reducing complaints of intermittent joint pain, fatigue, and pain in the neck, back, and waist areas. Such exercises should be brief, no more than 10 minutes, but the results are excellent and long-term, resulting in the increased prevention of MSDs (Angelova, 2019). Evidence-based practice shows that the surest course of injury prevention is health promotion and stretching in the workplace. This can increase the level of satisfaction for workers and worker productivity and reduce the cost of care/medication for companies and employees (Sundstrup et al., 2020).

According to a report on a company X, its workers have various conditions, such as long sitting, long standing, awkward postures, work layout, and so on, that are risk factors for MSDs. While in the exposure area, workers are at risk of experiencing further physical problems. Based on secondary data taken from the clinic visit report in 2021, the preliminary study conducted by the researchers identified that of the 530 employees who underwent treatment at the company clinic, 251 were diagnosed with MSDs. Given such a high incidence of employees experiencing MSDs, they need to be equipped with the knowledge and skills to use self-management strategies in daily work activities to improve their health, which will have the effect of increasing work productivity.

## Methods

This research adopted a quantitative approach by taking action or treatment (quasi-experimental) with a pre-test–post-test control group design. The MSD risk measurement instrument used the Nordic Musculoskeletal Questionnaire (see Table 1 and Table 2). The population in this study was all employees of a company X, and the sample size used was calculated using a rule-of-thumb formula, resulting in a total sample of 90. The study used probability sampling, with simple random sampling applied to two groups. The total intervention group consisted

of 22 participants, with a control group of 68 participants.

The inclusion criteria for this research were workers with an age range of 17 to 55 years, whose length of service at the factory ranged

from less than 1 year to 25 years. The job description for factory line/production included the following activities: lifting, carrying, pushing, and pulling up to 50 pounds per task during an 8-hour shift. The intervention group was given Self-Management: A New Eight-Minute

Table 1. Nordic Scale

Skeletal Muscle	Scoring				Nordic Body Map (NBM)
	1	2	3	4	
Neck					
Nape					
Left shoulder	1				
Right shoulder		2			
Left upper arm			3		
Back				4	
Right upper arm					
Wasit					
Hips					
Butt					
Left elbow					
Right elbow					
Left forearms					
Right forearm					
Left wrist					
Right wrist					
Left hand					
Right hand					
Left thigh					
Right thigh					
Left knee					
Right knee					
Left calf					
Right calf					
Left ankle					
Right ankle					
Left foot					
Right foot					

No complaints at all (Score 1); slight complaints of pain (slightly painful) (Score 2); there are complaints of pain (pain) (Score 3); complaints of very painful (very painful) (Score 4).

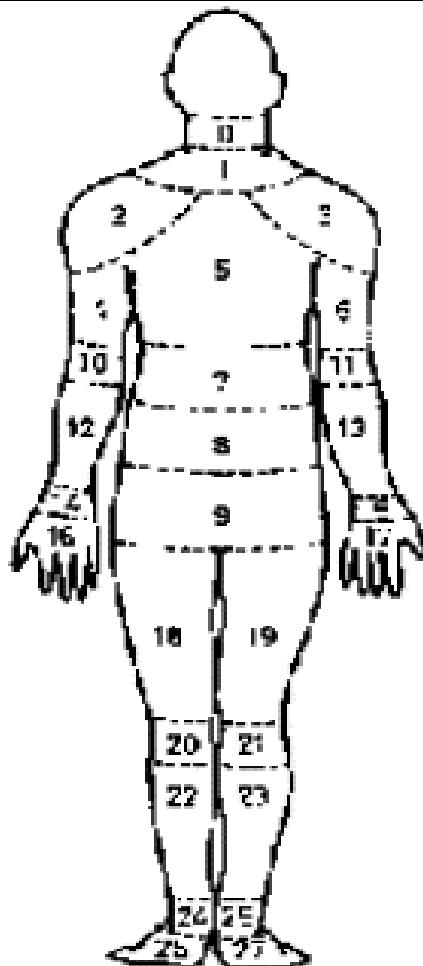


Table 2. The Nordic Scale Interpretation

Likert Scale	Score Total	Risk Level	Corrective action
1	28 – 49	Low	No corrective action is required yet
2	50 – 70	Middle	Action may be needed at a later date
3	71 – 90	High	Immediate action is required
4	92 – 112	Severe	Comprehensive corrective action is required as soon as possible

Stretching Program (Self-Management Program) as preventive intervention. The program included upper and lower limb exercises. Each employee could pick one or more types according to their needs (see Table 7).

Exclusion criteria were workers who were sick or on leave from work. The research location was a company X. Statistical analysis was conducted using Wilcoxon and Mann–Whitney tests. This study was approved by the Health Research Ethics Committee, Faculty of Medicine and Health, University of Muhammadiyah Jakarta (reference number 040/PE/KE/FKK-UMJ/I/2022).

## Results

Table 3 presents the characteristics of the respondents based on gender, of which there were more male respondents than female, namely 50 (55.7%). These data show that male workers or employees are likelier to develop MSDs. This is because men are given responsibility in the family hierarchy and must work. As economic drivers in the family system, men are obliged to work to provide for themselves and other family members.

Additionally, the majority of respondents, namely as many as 41 (45.5%), were in the age range of 21–30 years. This data shows that the largest

number of workers are adults. At an adult age, an individual's knowledge and skills have been provided through an advanced education process, so in adulthood, the purpose of life to be continuing one's self-existence and developing career paths in the private sector, government, labor, and business.

Another important factor is the length of work. Of the total 90 respondents, who were divided into the intervention group and the control group, it was found that the greatest value was in the category of having worked more than one year, namely 72.2%.

This illustrates that the majority of company employees have worked for more than one year, which demonstrates that these employees have high loyalty and feel comfortable working at the company. There are several reasons why a worker is comfortable working in one company without having to frequently change their place of work. These include salary (financial), facilities received, work atmosphere or environment, good and wise leadership, a clear career path, time flexibility, learning opportunities, company culture, and challenges.

**Identifying MSDs in the Intervention Pre-test and Post-test Groups for Self-Management Program at a Company X.** Table 4 shows that the pre-test group of a company X

Table 3. Respondents' Characteristics

Characteristics	Control group		Experiment group		Amount	%
	Amount	%	Amount	%		
<b>Gender</b>						
Male	14	63.6	36	52.9	50	55.7
Female	8	36.4	32	47.1	40	44.3
Total	22	100	68	100	90	100
<b>Age</b>						
17–20 years old	11	50.0	30	44.1	32	35.7
21–30 years old	9	40.9	23	33.8	41	45.5
31–50 years old	2	9.1	15	22.1	17	18.8
> 50 years old	0	0.0	0	0.0	1	0.0
Total	22	100	68	100	90	100
<b>Length of work</b>						
≤ 1 Year	4	18.2	21	30.9	25	27.8
> 1 Year	18	81.8	47	69.1	65	72.2
Total	22	100	68	100	90	100

Table 4. Pre-Post Treatment MSDs Level Characteristics of Employee Respondents at a Company X

MSDs Level	Control group		Experiment group		Total	
	Amount	%	Amount	%	Amount	%
<b>Pre-test</b>						
Low (28–49)	0	0	1	1.5	1	1.1
Middle (50–70)	1	4.5	4	5.8	5	5.5
High (71–90)	12	54.6	42	61.8	54	60.1
Severe (91–112)	9	40.9	21	30.9	30	33.3
Total	22	100	68	100	90	100
<b>Post-test</b>						
Low (28–49)	4	0	41	44.1	44	46.4
Middle (50–70)	2	4.5	17	26.6	15	6.7
High (71–90)	12	54.6	6	13.1	18	13.1
Severe (91–112)	9	40.9	5	16.2	14	11.2
Total	22	100	68	100	90	100

Table 5. Mann–Whitney Test Differences in MSD Complaints Among Employees in the Intervention and Control Groups

	Mean Rank	N	Mann–Whitney U	Z	Sig. (2-tailed)
Pre-test			1256.500	-0.147	0.883
Control group	59.67	22			
Experiment group	58.78	68			
Post-test			28.000	-8.571	0.000
Control group	102.03	22			
Experiment group	44.82	68			

Table 6. Wilcoxon Differential Test of Self-Management: A New Eight-Minute Stretching Program against MSDs at a Company X

	Mean	N	SD	Z	Sig. (2-tailed)
Pre-test	3.5795	68	0.63827		
Post-test	1.3182	68	0.46844	-8.221	0.000

employees had complaints of MSDs in the high category (60.1%). Complaints were felt in the neck, back, and lower back. It also shows that the post-test group of a company X employees had complaints of MSDs in the low category (46.6%). Complaints were felt in the areas of the neck, back, and lower back and were reduced after performing Self-Management Program.

#### Identifying the effect of Self-Management Program on Musculoskeletal Disorders in the Intervention and Control Groups at a

**Company X.** The results of the Mann–Whitney differential test showed that there was a change in the level of MSD complaints when Self-Management Program was carried out in the intervention and control groups.

The results of the different tests in Table 5 show that, at the pre-test, the intervention and control groups had high levels of MSD complaints and showed no significant difference, with a p-value of 0.883. However, after the intervention, a significant difference was found between the control and intervention groups, with a p-value

of 0.000. It can be concluded that during the pre-test, complaints of MSDs were at a high level; however, during the post-test or after being carried out and given Self-Management Program, both the intervention and control groups of employees experienced a significant decrease in the level of MSD complaints.

**Identifying the Effectiveness of Self-Management Program on MSDs in the Control Group at a Company X.** The results of the different tests in Table 6 show that during the pre-test and post-test, there was a significant difference between the control and intervention groups with a p-value of 0.000. It can be concluded that during the pre-test and post-test of MSD complaints, significant results were achieved by employees doing Self-Management Program.

## Discussion

In general, factory employees will experience health problems or complaints around areas of the body, specifically the arms, neck, shoulders, back, and legs. These are caused by the procedures, positions, and length of work. The type of work carried out often uses the shoulders, waist, back, and leg areas continuously, without any prior stretching or relaxation, for more than five hours of effort (Tavakkol et al., 2020).

Often, areas of the body that manifest MSDs will experience complaints approximately 12 months after the worker has carried out their work. In the results of this study, more employees experienced MSD complaints after more than two years of work. This time factor significantly contributes to the risk of MSDs (Mariawati et al., 2021). MSD complaints mainly include aches, pains, and cramps. Pain is the body's alarm system, which requires a change in position and rest to restore the body's full posture or anatomy. The recommended intervention is to focus on the ergonomic system, namely, how the body's posture when working must be appropriate and avoid awkward postures. Another intervention is to be educated on

the importance of bodily health and independent exercise or stretching (Labao et al., 2018).

Although these MSD complaints are in the severe category range, following Self-Management Program can result in a significant reduction. Performing the program's rhythmical movements stretches the joint areas of the bones, providing flexibility and relaxing these areas and reducing the shoulder, hip, and back pain that is typical of MSDs. Stretching that is done independently will be more effective and efficient, does not require an instructor, does not require space, and is flexible with time when working, so long as practitioners make the necessary commitment to self-management. If we want to be healthy and productive, then we must take care of our bodies while working. This can be accomplished by following the Self-Management Program during working time. This research can be further developed by looking at several factors, including the length of time that the Self-Management Program is used, identifying any comorbidities, and emphasizing the need for commitment by the company.

This stretching can be done at any time outside of rest hours, following actions or movements that can be chosen from the provided guide images and according to the areas of the body that will be stretched (see Table 7). This stretching is easy and does not interfere with working hours.

## Conclusion

**Self-Management: A New Eight-Minute Stretching Program (Self-Management Program)** delivers quite significant results in the reduction of pain caused by MSDs. Stretching carried out by employees can reduce complaints in the muscles and joints in areas of the body. This exercise is a systematic and structured movement, using a guide in the form of clear images so that it will provide flexibility and relaxation in the affected areas. Furthermore, this intervention can be carried out in all types of work. Stretching that is done independently will be more effective and efficient, so it does not re-

quire an instructor, does not require space, and is flexible with time when working, provided that its practitioners make a commitment to self-management. If we want to be healthy and

productive, then we have to take care of our bodies while working. While not engaged in working, follow the directions of Self-Management Program.

Table 7. Guide Intervention of Stretching

Name of exercise	Description	Picture
Eyes	Sit up straight, face forward and repeat this sequence several times without moving the head. Look up, then down. Look left, then right.	
Neck Stretches Retraction	Pull head back as far possible and down slightly. Hold posture for 10–15 seconds. Return your head to the centre. Repeat 2 or 3 times.	
Rotate Head from Side to Side	Slowly turn your head left as far as you can. Hold posture for 10–15 seconds. Return your head to the centre. Turn your head in the opposite direction and hold for 10–15 seconds. Repeat 2 or 3 times.	
Tilt head From Front to Back	Tilt your head slowly back, far enough so you can look up. Hold posture for 10–15 seconds. Return slowly to a normal position, then tilt forward to stretch the back of your neck and hold for 10–15 seconds. Repeat 2 or 3 times.	
Tilt head From Side to Side	Keep your face looking forward as you slowly tilt your head over to your shoulder. Don't go so far that you touch your ear with your shoulder. Hold posture for 10–15 seconds. Return your head to centre position. Move your head to your opposite shoulder and hold for 10–15 seconds. Repeat 2 or 3 times.	
Neck Protraction	Push head forward as far possible and. Hold posture for 10–15 seconds. Return your head to the centre. Repeat 2 or 3 times.	
Chin Tuck	Raise the head to straighten the neck. Tuck the chin in and downwards, creating a double chin. Hold for 10 seconds and repeat several times.	
Cross-Chest Stretch	Pull your left arm across your chest and push on your elbow close to your chest with your right hand. Hold for 10–15 seconds. Repeat 2 or 3 times.	
Triceps Stretch	Raise right arm over your head with elbow pointing towards the ceiling. Pull down to elbow with opposite arm and lean arm towards the opposite side. Hold for 10–15 seconds. Repeat 2 or 3 times.	
Biceps Stretch	Reach arms behind your back and interlock fingers. Slightly raise arms and pull them away from your trunk. Hold for 10–15 seconds. Repeat 2 or 3 times.	
Reach for the Sky	Raise hands over head, stretching as high as possible. Then bring arms back down. Hold for 10–15 seconds. Repeat 2 or 3 times.	
Protracting and Retracting the Shoulders	While standing, slowly take your shoulders forward as far as possible, as if you were trying to make them touch one another in front of your chest hold for 10–15 seconds. Then take them back as far as possible, squeezing the shoulder blades together and hold for 10–15 seconds. Repeat 2 or 3 times.	

Table 7. Guide Intervention of Stretching

Name of exercise	Description	Picture
Shoulder Shrugs	Slowly lift your shoulders up as if you were attempting to touch them to your ears. Lift as high as you can and hold for 10–15 seconds. Repeat 2 or 3 times	
Palm Press	Place palms together, point fingers toward ceiling. Keeping palms together, try to push heels of hands towards the floor. Hold for 10–15 seconds Repeat 2 or 3 times.	
Wrist Flexor Stretch	Keeping elbow straight, grasp the hand and slowly bend wrist back until stretch is felt. Hold for 10–15 seconds Repeat 2 or 3 times.	
Wrist Extensor Stretch	Keeping elbow straight, grasp injured hand and slowly bend wrist forward until a stretch is felt. Hold for 10–15 seconds Repeat 2 or 3 times.	
Wrist Radial/Ulnar Deviation	Grasp injured hand with the other hand and gently stretch the hand and wrist from side to side as far as possible. Hold for 10–15 seconds. Repeat 2 or 3 times.	
Forearm Pronation Stretch	With an injured hand in a handshake position, grasp and slowly turn to palm up until stretch is felt hold for 10–15 seconds and Repeat 2 or 3 times.	
Finger Flexion/Extension	Actively bend the fingers of the injured hand. Start with knuckles furthest from palm, and slowly makes a fist. Hold for 10–15 seconds and Repeat 2 or 3 times.	
Pectoralis Major Stretch	Place both arms directly behind you against a flat surface with arms parallel to the floor. Push against a flat surface until stretch is felt in chest Hold for 10–15 seconds. Repeat 2–3 times.	
Lying Abdominal Stretch	Lie on front side and push upper torso upwards with arms until stretch is felt. Hold for 10–15 seconds Repeat 2–3 times.	
Side Stretching	From a neutral standing position slowly bend to the left or right Hold for 10–15 seconds Repeat 2–3 times.	
Oblique Muscle Stretch	From a standing neutral position, cross your arms across your chest. Keep your back straight and slowly rotate your shoulders to each side. Repeat 10–15 times.	
Cat and Camel	On all fours, assume a “hump” back position by arching the back up. Hold briefly and then slowly lower the back into a sagging position Repeat 10–15 times.	
Lumbar Rotation	Slowly rock knees from side to side in a pain free range of motion. Allow back to rotate slightly. Repeat 10–15 times.	
Tail Wag	On all fours with back maintained in a neutral position, gently move hips toward the rib cage to side bend trunk. Hold briefly, then alternate and do the other side. Repeat 10–15 times.	
Latissimus Dorsi Stretch	Begin by kneeling and extending forward until a stretch is felt. Slide hands forward and push buttocks backward Hold for 10–15 seconds Repeat 2–3 times.	
Mid Back Stretch	With hands on the small of the back, slightly bend back until stretch is felt Hold for 10–15 seconds Repeat 2–3 times.	

Table 7. Guide Intervention of Stretching

Name of exercise	Description	Picture
Standing Quadriceps Stretch	Pull heel toward buttocks until a stretch is felt in front of the thigh. Keep leg close to body with knee pointing to the floor. Hold for 10–15 seconds Repeat 2–3 times.	
Lying Quadriceps Stretch	Lie on your side. Pull heel toward buttocks until a stretch is felt in front of the thigh Hold for 10–15 seconds Repeat 2–3 times.	
Lying Hamstring Stretch	Slowly bring the knee towards the chest. Gently extend leg with knee slightly bent and hold when in a comfortable stretch. Hold for 10–15 seconds Repeat 2–3 times.	
Sitting Hamstring Stretch	Bend knee of left leg and keep right leg extended with the knee slightly bent. Bend at the waist towards your left foot. Hold your lower leg for support. Hold for 10–15 seconds Repeat 2–3 times.	
Standing Hamstring Stretch	Left leg in front of you. Bend right knee. Lean forward, placing hands on bent leg. Keep back straight. Hold for 10–15 seconds Repeat 2–3 times.	
Soleus (Lower calf)	Hands against the wall. Keep the back leg straight, bend knees of both legs. Push heels down and slowly lean forward until a stretch is felt in the back of the calf Hold for 10–15 seconds Repeat 2–3 times.	
Gastrocnemius (Upper calf)	Hands against the wall. Keep back leg straight Push heels down and slowly lean forward until a stretch is felt in the back of the calf Hold for 10–15 seconds Repeat 2–3 times.	
Hip Adductors Stretching	Gently push knees to floor until a stretch is felt. Keep back straight. Hold for 10–15 seconds Repeat 2–3 times.	
Hip Abductors Stretching	Cross your right leg over your left leg. Look over your right shoulder while turning your trunk and pushing back on knee with left elbow Hold for 10–15 seconds Repeat 2–3 times.	
Hip Flexors/Extensors	Slowly lean and push hip to floor until a stretch is felt in front of hip Hold for 10–15 seconds Repeat 2–3 times.	
Gluteal Muscles stretching	Place right foot above left knee. Slowly lift left leg towards the chest. Keep arms flat on floor Hold for 10–15 seconds Repeat 2–3 times.	
Anterior Tibialis Stretch	Sit in a chair and cross your right leg onto your left thigh. Your malleolus, or ‘ankle bone’, should be about 2 inches off your thigh. With your left hand, grasp the top of your foot and pull your foot towards your left side, making sure movement occurs at the ankle joint. A stretch should NEVER HURT! Attain a good, pain free stretch and hold for 15 seconds, then switch and stretch left leg. Repeat that 2–3 times.	
Plantar Flexion Stretches	Point the foot down against resistance of the tubing. Let up slowly Repeat 2–3 times.	
Dorsiflexion Stretches	Pull the foot towards the face against the resistance of the tubing. Lower slowly Hold for Repeat 2–3 times.	
Inversion Stretches	Turn the sole of the foot inward against resistance of the tubing. Let out slowly. Keep knee pointed up. Repeat 2–3 times.	
Eversion Stretches	Turn the sole of the foot outward against resistance of the tubing. Let in slowly. Keep knee pointed up. Repeat 2–3 times.	

Table 7. Guide Intervention of Stretching

Name of exercise	Description	Picture
Seated Calf Stretch	In a sitting position, loop a towel around the ball of your foot. Gently pull back on the towel. The knee should be straight. Hold for 10–15 seconds Repeat 2–3 times.	

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## Traditional Art Dance Therapy to Reduce Stress Levels of Elementary School Students

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### Abstract

COVID-19 pandemic has accelerated the development of new learning systems that are more student-centered. Unfortunately, elementary school students experienced stress and difficulties in adapting from face-to-face to online learning system. Online learning environment lacks in accommodating outdoor activities which are important for children. Several techniques can be applied to reduce stress, including dancing. This research aimed to examine the effectiveness of Traditional Art dance Therapy (TATA) for elementary school students in reducing stress. In this quasi-experimental research, one-group pretest-posttest design without control group was applied, involving 84 students at one elementary school in Yogyakarta, Indonesia. Students' levels of stress were measured using the school-based stressors scale and were analyzed using bivariate Wilcoxon test. The results of the data analysis showed that older students had relatively lower stress levels than younger ones. A significant decrease in stress ( $p < 0.001$ ) from 61.90 to 41.99 was identified between the stress levels before and after the implementation of TATA. It concludes that TATA effectively reduces the stress levels among elementary school students adapting to the new learning system in the new normal era after COVID-19 pandemic.

**Keywords:** elementary school, stress, traditional art dance therapy

### Abstrak

**Terapi Tari Seni Tradisional (TATA) untuk Mengurangi Tingkat Stress pada Siswa Sekolah Dasar.** Pandemi COVID-19 telah mempercepat pengembangan sistem pembelajaran baru yang lebih berpusat pada siswa. Sayangnya, siswa sekolah dasar mengalami stres dan kesulitan dalam beradaptasi dari sistem pembelajaran tatap muka ke sistem pembelajaran online. Lingkungan belajar online kurang mengakomodasi kegiatan di luar ruangan yang penting bagi anak-anak. Beberapa teknik dapat diterapkan untuk mengurangi stres, termasuk menari. Penelitian ini bertujuan untuk mengetahui efektivitas Terapi Tari Seni Tradisional (TATA) untuk siswa sekolah dasar dalam mengurangi stres. Penelitian ini merupakan penelitian quasi-experimental dengan desain pretest-posttest satu kelompok tanpa control grup. Delapan puluh empat siswa di salah satu sekolah dasar di Yogyakarta, Indonesia, berpartisipasi dalam penelitian ini. Tingkat stres diukur dengan menggunakan school-based stressors scale. Data dianalisis secara bivariate menggunakan uji Wilcoxon. Siswa yang berusia lebih tua dilaporkan memiliki tingkat stres yang relatif lebih rendah dibandingkan siswa yang berusia lebih muda. Terdapat penurunan stress yang signifikan ( $p < 0,001$ ) antara tingkat stres pada siswa sebelum dan sesudah terapi tari seni tradisional, dengan tingkat stres dari 61,90 menjadi 41,99. Terapi tari seni tradisional (TATA) efektif menurunkan tingkat stres pada siswa sekolah dasar yang mengalami perubahan sistem pembelajaran di era new normal.

**Kata Kunci:** sekolah dasar, stres, terapi tari seni tradisional

### Introduction

The new normal era after the COVID-19 pandemic has revolutionized the school learning system through the implementation of online learning. In higher education, this situation has dis-

rupted the three principles of higher education known as *Tri Darma Perguruan Tinggi* with the shift from face-to-face activities to online activities (Indrawati, 2020). The shift appears as a challenge for all humans, especially educators, students, and even parents (Husein, 2022). Information technology limitations hinder both teachers and students from effectively using online media, especially when both groups face similar challenges in understanding technology usage. Furthermore, self-assessment cannot be effectively conducted, and the exploration of students' skills and talents becomes less effective (Sari et al., 2021). Such situation does not only pose academic problems, but also triggers psychological impacts as students need to deal with the difficulties in using online media and inadequate social relations with their peers (Palupi, 2020).

Erik Erikson's Theory of Psychosocial Development describes the industry versus inferiority stage, which occurs during elementary school years. In this stage, children begin to develop a sense of competence and mastery through new experiences and relationships. At this stage, children learn from their environment and will be capable of exploring new skills (Issawi & Dauphin, 2017). Given the importance of fostering a strong connection with the environment, support from teachers and parents, along with social interaction with friends, is essential in addressing feelings of inferiority (Mokalu & Boangmanalu, 2021), which cannot be adequately addressed in an online setting. Online learning has been known to trigger symptoms of stress in elementary school students that include: 1) emotional symptoms such as irritability, difficulty concentrating, and mood swings; 2) cognitive symptoms such as lack of attention and fear of failure; and 3) physical symptoms such as sleep disturbances and decreased appetite.

The stress experienced by students in the new normal period may result from tight learning schedule with relatively short break between subjects or courses, excessive workload, lack of

peer interaction, limited learning method, and small study space at home (Palupi, 2020). These conditions can cause weariness, depersonalization, and low self-efficacy, resulting into emotions of laziness, discouragement, apathy, impatience, truancy, and neglect of learning activities (Lindasari et al., 2021; Rifai & Triyono, 2021). Stress in children needs proper therapy (Malhotra & Sahoo, 2018). Stress management allows children to have stronger focus, concentration, and ability to effectively comprehend various information. Strong learning concentration will boost student achievement (Kintari & Yahya, 2014) which can be enhanced using group counselling services, brain gyms, quantum learning, and relaxation (Wirmayani & Supriyadi, 2017).

It is necessary to find solution to the burden that students experience due to the shift in the learning system (Wirmayani & Supriyadi, 2017). Students may have physical and psychological health issues from the feeling of pressure and subjected to certain demands (Kintari & Yahya, 2014), including anxiety, stress, and depression. While in online learning, elementary school children often experience significant stress. According to Kintari and Yahya (2014), older students in grades 4–5 have an average stress level of 31.79, while younger students in grades 1–3 have an average stress level of 29.67.

In 1987, Jacobsson established and refined relaxation as a behavioral therapy to reduce tension and anxiety since all forms of tension, including mental strain, are created by muscle contractions (Mulyani, 2016). When experiencing stress or worry, relaxation lowers the physiological responses, resulting in a more relaxed body and a more tranquil state of mind (Georgios et al., 2018). Relaxation can be achieved by extracurricular or non-learning-related activities (Nugraha & Sari, 2017). Extracurricular activities are beneficial for building disciplined character, cultivating artistic and athletic talents and hobbies, and enhancing academic performance (Abdullah et al., 2014; Monteiro et al., 2014). As an extracurricular activity,

dancing allows children to interpret body motions, perform multiple movements, and balance the body and mind (Salo, 2019). The dancing extracurricular activity can be offered in the forms of traditional dance or traditional art dance.

Dance therapy can be utilized as a non-pharmaceutical therapy to assist overcome emotional problems as it enhances the circulation of oxygen in the blood to the muscles and brain, hence stimulating the release of endorphins (Fares et al., 2016). Students taught using traditional dance-based learning methods have a higher quality of life than those educated with learning methods that only focus on the educational curriculum. It is because traditional dance-based learning methods can help students find new knowledge that has a significant impact on physical fitness, self-confidence, relationships, and social activities, as well as fostering a more positive environment (Georgios et al., 2018). Additionally, combining art dance with Javanese gamelan music featuring pelog, a heptatonic tuning employed for Javanese gamelans with unequal intervals that form various pentatonic scales, has been demonstrated to decrease stress

and depression (Abdullah et al., 2014; Nugraha & Sari, 2017).

According to Rahmawati et al. (2018), dance therapy is useful to increase students' cognition, affection, and self-efficacy, as well as overcoming emotional problems or pressures. In this research, Traditional Art dance Therapy (TATA) was created by the first author (as a nurse and dance creator) to address stress among elementary school children. TATA has been registered to the Directorate General of Intellectual Property - Ministry of Law and Human Rights of the Republic of Indonesia with number EC00 202236416.

## Methods

This research was conducted in November 2022 in a quasi-experimental method using pre-test and post-test, without a control group, involving 84 (97%) students at one of elementary school in Yogyakarta, Indonesia. This research employed a total sampling method, excluding students who had trouble concentrating. Two out of 86 participants were disqualified for not meeting the criteria. The inclusion criteria requir-

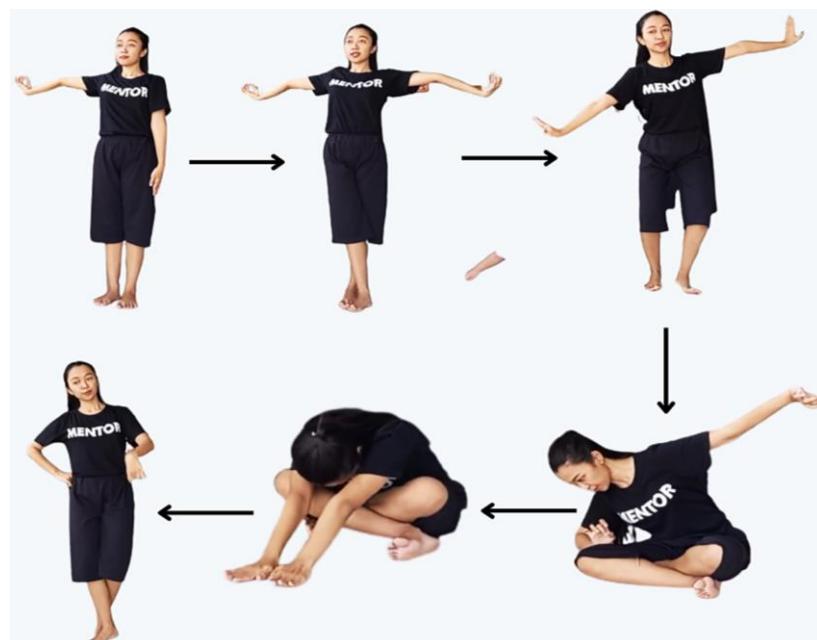


Figure 1. Steps of Traditional Art Dance Therapy Movements

ed students to be able to hear, move actively, and have no mobility problems. The school-based stressors scale (Monteiro et al., 2014) was used as a questionnaire to measure the stress levels of the students. Descriptive analysis was performed to explore the demographic characteristics of the respondents, including percentage, mean, and standard deviation (SD). The effectiveness of the TATA in reducing stress was analyzed using the Wilcoxon test. The validity value of the instrument is 0.3, and its reliability is 0.99.

Participants completed 31 questionnaires on a scale where a score of 1 indicated the least disturbance or influence, and a score of 3 indicated the most disturbance or influence. Therapy sessions were conducted in five large groups and divided into three stages. In the first phase, students received 10 minutes of instructions. In the second phase, they spent another 10 minutes completing a pre-test to assess their stress levels. In the third phase, they received a 30-minute therapy, including opening activities, warm-ups, core treatment, and closing exercises. Each therapy session lasted for 50 minutes. This therapy was administered once a week over a span of three weeks. In carrying out the therapy, the researcher was assisted by 3 research assistants as role models who also helped with the collection of the filled-out questionnaire. The research was conducted with strong compliance to research ethics and respect to participants' rights, welfare, fairness and approval through informed consent. This research and writing of manuscripts have been approved by the Ethics Commissions of Faculty Medicine, Public Health, and Nursing under number KE/FK/1043/EC/2022.

The traditional art dance practiced combined a variety of Yogyakarta-style dance movements which originally created by the Shinta Art Dance Studio (Figure 1). This traditional art dance was developed by the first author who has experience both as a nurse and a traditional dancer. The dance then evaluated by expert traditional music composers, psychologists, tradition-

nal dance teachers, and nurses. Trials were carried out with 10 children once a day for a week with a duration of six minutes. The trial results showed that 9 out of 10 children considered the dance easy, fun, interesting, and relaxing. It also increased their enthusiasm for learning and motivated other children to participate in the dance.

## Results

There were 84 (94%) elementary school students who met the criteria and agreed to participate in the research. The participants' mean age was  $(9.76 \pm 1.53)$  years old. Stress in children during the transition from offline to online learning might be triggered by multiple factors, such as age (younger children tend to have much higher stress scores), sex (female children tend to have higher stress), birth order (middle children tend to experience less happiness, whereas youngest children have greater resilience), sleep schedule (children start sleeping at 9 PM have relatively higher levels of stress), and parents' profession (children whose parents are self-employed tend to have higher stress levels than children of office workers) (Table 1).

The academic domain was found to contribute the least to stress in school-aged children, whereas peer interaction showed the greatest contribution. In the academic context, elementary school students experience distress when they are unable to complete schoolwork due to peer distractions. Moreover, they feel stressed when they receive harsh words from peers, being teased, and when the teacher sends negative reports to their parents.

**Impact of Intervention.** As shown in Table 2, younger children, female, being 1<sup>st</sup>–3<sup>rd</sup> child in the family, parents who work at home, and sleep before 9 PM have considerably greater stress scores. Meanwhile, Table 3 presents the stress levels before and after TATA intervention according to their grades. The post-test was carried out after the intervention had been completed.

Table 1. Description of Participant Demographics

Demographic Characteristic	n (%)
<b>Ages</b>	
7 years old	6 (7.0)
8 years old	13 (15.1)
9 years old	20 (23.3)
10 years old	19 (22.1)
11 years old	16 (18.6)
12 years old	9 (10.5)
13 years old	3 (3.5)
<b>Sex</b>	
Male	45 (52.3)
Female	41 (47.7)
<b>Position in the family</b>	
1st child	37 (43.0)
2nd child	33 (38.4)
3rd child	11 (12.8)
4th child	3 (3.5)
5th child	2 (2.3)
<b>Parent profession</b>	
Self-employed	17 (19.8)
Manual worker	26 (30.2)
Homemaker	12 (14.0)
Officer	17 (19.8)
Farmer	12 (14.0)
Civil servant	1 (1.2)
Doctor	1 (1.2)
<b>Sleep schedule</b>	
19:00 WIB	6 (7.0)
20:00 WIB	22 (25.6)
21:00 WIB	40 (46.5)
22:00 WIB	8 (9.3)
23:00 WIB	6 (7.0)
00:00 WIB	4 (4.7)

## Discussion

**Participant's Characteristics.** Before the intervention, participants experienced significant stress during the new normal era with an average stress score of 61.90. As Palupi (2020) explained, during the COVID-19 pandemic, elementary school students were prone to experiencing stress. Jatira and Neviyarni (2021) also added that the learning process during the COVID-19 pandemic caused students to experience higher stress and reluctance to learning. Maunula et al. (2021) asserted that stress in elementary school students during the pandemic was caused by sudden changes in the learning process which put pressure on children, boredom from limited daily activities and lone-

liness from the lack of social interaction. Stress in students during the pandemic can also be caused by issues that occur between students and teachers which can trigger tension, lack of family attention, poor eating patterns, lack of sleep, and poor stress management (Yasmin et al., 2020).

**Stress Levels Before and After TATA Intervention.** In general, this research found that all participants had relatively higher levels of stress based on the results of the pre-test. After given traditional art dance therapy three times, the stress levels of students from all classes were decreased. Based on the results of the pre-test and post-test in Table 2, 1st grade students had a relatively higher stress level compared to

Table 2. The Demographic of Stress Levels

Demographic	Stress Score Before the Intervention	
	Mean±SD	Min-Max
<b>Ages</b>		
7–10 years old	65.60±5.58	55–75
11–13 years old	57.81±8.83	46–69
<b>Sex</b>		
Male	61.27±9.48	41–80
Female	62.59±8.99	39–75
<b>Position in the family</b>		
1st – 3rd child	62.47±9.84	42–76
4th – 5th child	61.41±4.49	57–65
<b>Parent profession</b>		
Self-employed	59.76±10.18	39–74
Manual worker	59.46±9.60	41–73
Homemaker	67.50±4.52	59–75
Officer	61.41±9.47	41–76
Farmer	66.17±6.67	55–80
Civil servant	67	
Doctor	46	
<b>Sleep schedule</b>		
19:00 – 21:00 WIB	62.34±9.37	43–75
22:00 – 00:00 WIB	59.23±11.53	42–71

Table 3. Participants' Stress Levels (before and after TATA Intervention)

Grade	n (%)	Pre-test*(Before TATA)		Post-test*(After TATA)		p	Effect Size
		Mean±SD	Min–Max	Mean±SD	Min–Max		
1	8 (9.3)	73.75±0.996	71–80	55.13±1.260	50–60		
2	17 (19.8)	66.88±0.981	60–76	50.29±0.513	47–55		
3	20 (23.3)	62.45±1.871	41–71	43.50±1.272	31–52		
4	13 (16.3)	58.14±1.889	46–66	35.86±1.099	31–41		
5	13 (16.3)	51.21±2.540	39–71	32.71±0.773	31–41		
6	13 (15.1)	62.77±1.590	53–71	37.31±0.692	33–41		
Total	84 (100)	61.90±9.21	39–80	41.99±8.26	31–60	< 0.001	2.275

\* Min. total score = 31; Max. total score = 39; 1 = not disturbing; 2 = slightly disturbing; 3 = very disturbing

students from other classes, while the 5th graders had a relatively lower stress level. The gap could occur as older children have developed better the behavioral, cognitive, and emotional strategies as well as more effective stress coping strategy (Monteiro et al., 2014). Based on the results of the Wilcoxon test, the probability value of sig. (2-tailed) is 0.000 ( $p < 0.05$ ) indicates the presence of a significant difference in the pre-test results compared to the post-test results. In addition, there is a very large difference between the pre-test and post-test results (Cohen's  $d = 2.28$ ).

**Scientific Concept Related to Art Dance.** The designed choreography for the dance comprises of seven primary movements that accommodate muscle stretching and relaxation. This combination of stretching exercises has been shown to reduce stress levels, boost learning motivation, and decrease student tiredness (Hastuti & Kurnia, 2017). This can be done by performing extension, rotation, slight adduction flexion, followed by extension and slight hyperextension.

The initial movement is stretching the left hand,

followed by wrist and finger flick called *ngithing* for three times-eight counts. This exercise focuses on the motor abilities of the hands, wrists, fingers, and the biceps and triceps of the hands through a combination of stretching and a variety of Yogyakarta dances, specifically *ngithing*. The stimulation of motor skills in the arms and hands stimulates the blood flow to the brain that balances the right and left brain. This movement also activates the memory for clearer mind and creativity. The second movement is intended to emphasize hand motor skills and foot motor skills. This movement consists of *nylekenthing* the toes or toes movement, stretching the hands, and *ngithing* or flicking the wrists and fingers for a total of 4x8 counts. Each hand is kept in the certain position to allow the foot motor exercise reduce blood pressure and maintain a normal heart rate (Sonhaji, 2021). The third movement seeks to calm breathing by coordinating slow circular movements with alternate inhalations and exhalations. Both the right and left hands are extended upwards, then the wrists and fingers are extended straight up to create the *ngruji* dance variety with a period of 4x8 counts, and then gently rotated. Breath relaxation promotes alveolar ventilation, maintain oxygen exchange in the lungs, decreases muscle tension, and facilitates oxygen transfer to the brain to induce a state of calm and relaxation (Auliya & Yudiarso, 2022). Besides, breath relaxation can help lessen levels of anxiety (Wulandari & Wahyuningsih, 2022).

The fourth movement is performed by bending the right and left hands in front of the chest, then followed by the wrists and fingers of the hands facing down to form a variety of worship dances with a duration of 3x8 counts. Meanwhile the body movement is to sit with the right leg bent and the knee up, and left leg with knee flat on the floor. This movement is similar to squat and called sitting *jengkeng* which aimed to train focus and relaxation. The fifth and sixth movements are designed to relax the back and head. The sixth movement is a blend of the *ngithing*, *ngayang*, and *ogeck lambung* dances. This exercise is part of the progressive muscle

relaxation technique, which involves tensing and then relaxing the muscles to minimize muscle tension, muscle soreness, improve fitness, and enhance oxygen flow (Wulandari & Wahyuningsih, 2022). Repetition and regularity of this progressive muscle relaxation technique can also reduce stress levels. This relaxation will decrease the activity of the sympathetic nerves and stimulate the parasympathetic nerves to control the adrenocorticotropic hormones and the adrenal glands to lower the release of adrenaline. Lower adrenaline hormone eliminates the feelings of wrath, worry, fear, and tension, allowing the body to rest (Ilmi et al., 2017). The seventh movement is body standing with legs crossed and toes up, while two hands are extended towards the lower body, the wrists and fingers make various *ngithing* dances. This movement is followed by 4x8 counts of leaping forward and backwards, each four times. In the movement, the legs are stretched to alleviate muscle tension caused by exhaustion after long activities or long duration of sitting. Stretching the leg muscles will stimulate the back and neck muscles, which will induce a sense of peace and relaxation to lower the stress levels.

Traditional art dance has been useful in lowering stress in primary school-aged children, according to this research. In this research, the average stress score has decreased from 61.90 to 41.99 after the intervention of traditional art dance therapy which was delivered once a day for 3 days a week. The results of this research align with Bräuninger (2014) who found that dance therapy effectively reduces both short-term and long-term psychological stress and improves stress management. Dance therapy, which uses a psychodynamic approach combining directive and non-directive leadership as well as interpersonal approaches, can enhance quality of life, improve coping mechanisms, and reduce stress levels. Badave et al. (2020) explained that art dance therapy also significantly reduces the tension and anxiety. Kella et al. (2021) revealed that dance movement-based treatment can help lessen both physiological and psychological symptoms of depression.

Azizah and Tondok (2022) showed that art dance therapy may be implemented for children to adults and has shown successful in improving health and helping to deal with psychological problems such as schizophrenia, depression, stress, quality of life, eating disorders, and emotional disorders.

According to Filippou et al. (2018), traditional dance helps lower tension and anxiety. Engaging in traditional dance enhances memory and mental endurance, improves self-confidence, self-expression, emotional exploration, goal setting and achievement, and helps overcome new challenges (Salo, 2019). Georgios et al. (2018) also highlighted the significance of traditional dance in improving motor abilities and assisting in preserving physical fitness, self-confidence, and social relationships. It fosters a more pleasant environment where youngsters can organize themselves and acquire repetitive movements (Filippou et al., 2018). Furthermore, traditional dance motions alleviate stress by lowering blood pressure, managing stress, improving cardiovascular parameters, maximizing the oxygen flow and reducing the stress level (Auliya & Yudiarso, 2022; Sonhaji, 2021). During dance therapy sessions, distinct treatments and approaches are required for each group of participants in order to enhance therapy outcomes (Bräuninger, 2014).

**Characteristics of Stress Before and After Administering the TATA Intervention.** According to Monteiro et al. (2014), a person's behavioural, cognitive, and emotional stress coping methods, as well as their problem-solving skills, improve with age. In this research, female participants, the fourth child, and those who began sleeping at 9 PM had relatively higher stress levels. Girls are known to release more cortisol in response to stress than boys (Raffington et al., 2020). Children who are born as middle children tend to experience less happiness, whereas the youngest children in families have greater resilience (Fukuya et al., 2021). In addition, participants whose parents are homemakers report higher

levels of stress. Children of mothers who are overburdened with household tasks with no time for relaxation or self-care more likely to exhibit behavioural issues (Friedman, 2018).

Art dance therapy is effective in reducing academic stress and helping to overcome personal problems as a coping strategy. It increases self-efficacy, provides social support, addresses mood and emotional problems, enhances spirituality, assists the cognitive system, stimulates imagination, and facilitates easier adaptation to the environment (Rahmawati et al., 2018; Valarmathi et al., 2016). In a different research, dance therapy had a favourable effect because dance motions are effective at reducing students' stress levels (Masruroh & Nugroho, 2021). Dance is a fundamental art form that expresses ideas through bodily movements. Dance is transformed into an effective therapy for expressing one another's emotions and providing support. It is considered that movement in dance allows the creation of creative ideas, releases the stress and cheers up the children (Rasman & Nurdian, 2020).

**Strengths and Limitations.** In this research, researchers did not employ a control group which could have generated data with higher validity due to the limitations of the participants. Instead, the researchers used the pre-test and post-test to examine the gap in the stress levels before and after the treatment. A control group was not employed considering that this research only examined whether TATA could reduce stress in elementary school-aged children. Limitations could also occur during the data collection, where students' moods could have impacted the validity of the data.

## Conclusion

The new learning systems applied in the new normal era after the COVID-19 pandemic have triggered stress among elementary school students who had to adapt to learn within limited space for movement. In this research, TATA was developed to reduce the stress level of

elementary school students during their adaptation to the new learning systems. Future studies are encouraged to conduct deeper research on the implementation of TATA for pathological patients.

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## Why Did They Fail? Investigating The Eight Invalid Dimensions of Patient Safety Culture: Mixed Method Research

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### Abstract

Resistance to adopting patient safety culture practices or technologies can hinder improvements in patient safety. This study contributes to enhancing the understanding of patient safety culture (PSC) assessment by identifying the specific factors that render some PSC dimensions invalid and offering actionable recommendations for improvement in healthcare settings. Primary data were gathered using a mixed method of explanatory sequential design, with quantitative data collection and analysis followed by qualitative data collection and analysis. The study was conducted in the leading Private Hospital XYZ, one of the private hospital groups internationally accredited with Joint Commission International with a 110-patient bed capacity. Among the 12 dimensions, only feedback communication about error, handoffs and transitions, and teamwork across units were determined to be valid and reliable. Therefore, eight dimensions, including communication openness, continuous improvement, frequency of error reported, management support, overall patient safety, supervisor/manager expectation, and staffing were explored further through a focus group discussion (FGD). Delving into quantitative and qualitative insights has identified critical nuances that extend beyond mere quantitative metrics. The qualitative insights gleaned from healthcare professionals through the FGD illuminated the nuanced human aspects of safety culture that traditional measurements may overlook.

**Keywords:** anonymous reporting, management of communication, mixed method, patient safety culture

### Abstrak

**Mengapa Penilaianya Gagal? Menyelidiki 8 Dimensi yang Tidak Valid dari Budaya Keselamatan Pasien: Penelitian Mixed Method.** Penolakan untuk mengadopsi praktik atau teknologi budaya keselamatan pasien dapat menghambat peningkatan keselamatan pasien. Penelitian ini bertujuan untuk meningkatkan pemahaman tentang penilaian budaya keselamatan pasien (Patient Safety Culture [PSC]) dengan mengidentifikasi faktor-faktor spesifik yang menyebabkan beberapa dimensi PSC tidak valid, dan memberikan rekomendasi yang dapat ditindaklanjuti untuk perbaikan di lingkungan pelayanan kesehatan. Data primer dikumpulkan dengan menggunakan mixed method of explanatory sequential design, dengan pengumpulan dan analisis data kuantitatif diikuti dengan pengumpulan dan analisis data kualitatif. Penelitian dilakukan di Rumah Sakit Swasta terkemuka XYZ, salah satu grup rumah sakit swasta yang terakreditasi internasional Joint Commission International dengan kapasitas 110 tempat tidur pasien. Diantara 12 dimensi, hanya dimensi feedback communication about error, handoffs and transitions, dan teamwork across units, yang memenuhi syarat valid dan reliabel. Oleh karena itu, 8 dimensi yaitu communication openness, continuous improvement, frequency error reported, management support, overall patient safety, supervisor/manager expectation, dan staffing didalamnya lebih lanjut dalam focus group discussion (FGD). Melalui penggalian wawasan kuantitatif dan kualitatif, telah teridentifikasi deskripsi penting yang melampaui metrik kuantitatif. Wawasan kualitatif yang diperoleh dari para profesional di bidang kesehatan melalui FGD telah menyingkap aspek-aspek budaya keselamatan yang bernuansa manusiawi, yang mungkin terlewatkan oleh pengukuran tradisional.

**Kata Kunci:** budaya keselamatan pasien, komunikasi manajemen, metode campuran, pelaporan anonim

## Introduction

A key determinant of healthcare system quality in healthcare facilities around the world is en-

suring patient safety. One of the cornerstones for enhancing patient safety today is encouraging a positive patient safety culture (Zwijnenberg et al., 2016). Healthcare professionals

play a pivotal role in reducing risks and complications in their patient care. Patient safety culture (PSC) evaluations are required for healthcare institutions to fully comprehend the elements that require immediate concern, recognize the positive and negative aspects of the organization's safety culture, and help hospital units identify prevailing patient safety issues while comparing their findings with other hospitals (Azyabi et al., 2021; Basson et al., 2021; Campione & Famolaro, 2018). Enhancing PSC within the hospital unit will enable administrators, managers, and policymakers to benefit from higher standards, better patient outcomes, fewer mistakes, and a more cost-effective healthcare system (Alswat et al., 2017; Ammoura et al., 2015). PSC is the result of individual and collective perspectives, perceptions, capabilities, and practices that influence a company's dedication, approach, and proficiency in health and safety management. PSC can be transformed by fostering an atmosphere where mistakes and bad outcomes are dealt with openly (Zwijnenberg et al., 2016).

The Hospital Survey on Patient Safety Culture (HSOPSC) from the US Agency for Healthcare Research and Quality (AHRQ) is the most extensively used tool for evaluating patient safety culture in healthcare premises. HSOPSC examines how hospital workers perceive their institutions' principles, beliefs, and standards, as well as its reporting of events, communication, leadership, and management (Rockville et al., 2021).

Several factors can contribute to the wide variety of interpretations of PSC, such as organizational, cultural, and regional differences (Churruca et al., 2021). Organizational differences, such as leadership styles and institutional priorities, can shape the overall safety culture within a healthcare facility. Cultural differences can affect how patients and healthcare professionals perceive safety, communicate about risks, and engage in preventive measures. Regional disparities in healthcare resources and infrastructure can lead to uneven

access to high-quality care. Hence, a comprehensive understanding of these factors and the development of strategies to bridge these gaps are crucial for fostering a consistent and robust patient safety culture (Kang et al., 2021).

Nevertheless, practicing a PSC has certain problems. Resistance to adopting PSC practices or technologies can hinder improvements in patient safety. Addressing this challenge requires fostering a culture that embraces change and innovation, with a focus on continuous improvement (Titi et al., 2021). Hierarchical structures within healthcare organizations may create power imbalances that hinder open communication and the sharing of safety concerns. Hence, a flattened hierarchy that encourages collaboration and open dialogue is essential for a robust patient safety culture (Kearns et al., 2021).

Doctors and nurses also have various viewpoints regarding the teamwork they engage in. In general, based on previous studies, doctors appear to be happier with doctor-nurse teamwork than nurses (Elliott-Mainwaring, 2022). Nurses reported that compared to doctors, it was more challenging for them to speak up, conflicts were not effectively resolved, more input was required in decision-making, and nursing opinion was not well appreciated. Disparate views on teamwork may also be a significant factor in nurses' discontent with their line of work, resulting in a major nursing shortage (Elliott-Mainwaring, 2022; Kearns et al., 2021). Gaining the trust of frontline healthcare professionals for them to discuss their perceived hurdles and potential solutions openly required some time (Sreeramoju et al., 2018). A culture that discourages reporting of errors or near misses can impede the identification and resolution of potential safety issues. Fear of blame, reprisals, or a perceived lack of organizational support may discourage healthcare professionals from reporting incidents (Kusumawati et al., 2019).

Quantitative research on patient safety culture

has been extensive; however, qualitative or mixed-methods studies in this field are limited. Hence, the primary goal of this study is to unravel the intricacies surrounding the dimensions of the PSC framework, shedding light on why some of its dimensions fell short of capturing essential aspects of patient safety culture. This research aims to explore further into the qualitative nuances that underlie the invalidity of some of PSC dimensions by employing a mixed-method research approach, specifically an explanatory sequential design. We use structured focus group discussions (FGDs) to glean valuable insights from healthcare professionals to understand the underlying causes of this invalidity and provide a comprehensive explanation for their shortcomings.

## Methods

The primary data were gathered using a mixed method of explanatory sequential design with quantitative data collection and analysis followed by qualitative data collection and analysis (Creswell & Clark, 2017; Kaur, 2016; Toyon, 2021). The study was conducted in the leading Private Hospital XYZ, one of the private hospital groups with excellent service values, internationally accredited with Joint Commission International (JCI) with a capacity of 110 patient beds and has become a benchmark private hospital group compared to other private hospital groups in the vicinity.

At stage one (quantitative method), this study used the second version of HSOPSC contains 42 items measuring 12 dimensions, consisting of blaming response (three questions), communication openness (three questions), continuous improvement (three questions), feedback and communication about error (three questions), frequency of events reported (three questions), handoffs and transitions (four questions), management support for patient safety (three questions), overall perceptions of patient safety (four questions), staffing (four questions), supervisor/manager expectations and actions promoting patient safety (four questions), team-

work across units (four questions), and teamwork within unit (four questions) (Rockville et al., 2021). We shared the questionnaire with the target population within the hospital, consisting of 8 general practitioners, 83 specialist doctors, and 169 nurses and midwives. The SmartPLS™ version 4.0 was chosen because it offers a bootstrapping option to verify significance when performing the partial least square-structural equation modeling (PLS-SEM) analysis. Each dimension of PSC is assessed by statistical methods in the form of mean, standard deviation, and maximum-minimum value. The research questionnaire uses a Likert measurement scale of 1 to 5 for the answer options for each question, ranging from 1, “strongly disagree,” to 5, “strongly agree.” Data processing with this approach provides two types of output, the outer or measurement model that describes the relationship between indicators and their variables to confirm the reliability and validity of each indicator used in the model using indicator reliability (outer loading), construct reliability (Cronbach’s alpha and composite reliability), convergent validity (average variance extracted/AVE), and discriminant validity (heterotraitmonotrait [HTMT] ratio) to ensure every indicator in this research model is accurate and dependable for measuring each construct (Hair et al., 2019, 2022, 2024).

In stage two (qualitative method) to collect qualitative data, two semi-structured in-depth interviews within the FGDs were conducted for the dimension to collect qualitative data. During stage one of analysis was regarded as invalid. Participants for the interviews were selected purposively using a critical case sampling approach. The participants for FGD consisted of 10 participants with 3 specialist doctors, 2 general practitioners, 2 head nurses, and 3 nurses/midwives. The questions are listed in Table 1. Interview responses were noted contemporaneously, and the interview notes were confirmed with the interviewees at the end of the interviews. All the FGDs were conducted in Bahasa Indonesia, with each FGD lasting around 120–150 min.

Table 1. Semi-Structured Interview Questions

Interview Questions		
1.	On a scale of 1–10, how important do you think it is to assess this dimension, and why is it important/not important?	
2.	What are the difficulties in the process of assessing this dimension?	
3.	How do you think implementation in the unit can be improved?	
4.	How is day-to-day implementation in the unit, and what are the difficulties experienced?	

Table 2. Demographic Data of Participants

Baseline Characteristic	Total (N = 260)	
	n	%
Gender		
Female	198	76.2
Male	62	23.8
Profession		
Specialist Doctor	83	31.9
General Practitioner	8	3.1
Midwives/Nurses	169	65.0
Number of incidents reported		
0 incident	76	29.2
1–2 incident	147	56.5
>3 incident	37	14.2
Length of employment		
< 1 year	47	18.1
1–5 year	137	52.7
> 5 years	76	29.2
Per-week working hours		
20–39 hours/week	47	18.1
40–59 hours/week	88	33.8
> 60 hours/week	125	48.1

## Results

The demographic data of the 260 eligible participants are presented in Table 2. The result of the description of the PSC dimension is described in Table 3. Of a total of 12 dimensions, eight indicators were eliminated because the indicators did not meet the requirements for validity. Only teamwork within units (TWU), feedback communication about error (FCE), teamwork across units (TAU), and handoffs and transitions (HT) are determined to be valid and reliable.

The result of the reliability and validity test of the PSC dimensions are described in Table 4, with only four dimensions proven to be valid. In the second stage, two semi-structured in-

depth interviews within the FGDs for the eight dimensions, i.e., communication openness, continuous improvement, frequency of error reported, management support, overall patient safety, supervisor/manager Expectation, and Staffing were identified as invalid during the quantitative stage.

**Blaming Response.** During the FGD, the study found that the average dimension importance rating from participants was 8.05 out of 10. Regarding the question of the difficulty of rating the questionnaire by respondents, 30% of respondents felt that the dimension was irrelevant because their status in the organizational structure is as partners not workers. The difficulty of implementation in the field is the absence of an anonymous reporting system

(100%) because they are afraid of being considered complainers/snitches (30%) and presumptuous (20%), can be scolded later by their seniors (40%), and a sense of reluctance towards coworkers (10%). All FGD participants suggested the implementation of an anonymous reporting system that focused on the accuracy of reporting.

*“In practice, most of my friends in the field are afraid to speak up. They do not want to be blamed. Moreover, if we report other people, as I said earlier, we will even be considered snitches.” (P1)*

*“We do not have an anonymous reporting system, so when writing, it could be considered blaming or accusing. Moreover, if we report about a higher-level party, we feel reluctant. If we report something about someone else and we are found out, we can be confronted by a specialist or senior.” (P4)*

**Communication Openness.** The average dimension importance rating from participants was 8.15 out of 10. Specifically, 30% of respondents felt they did not know who the higher authority being referred to in this dimension was because their status was as partners and not workers so they could not answer the question.

*“I am a partner, not a worker. Therefore, the question of who the higher authority is unclear. Is it the medical committee? Is it the director of the hospital? It is not applicable for specialists.” (P3)*

**Continuous Improvement.** The average dimension importance rating from participants was 9.0 out of 10. In particular, 30% of respondents felt that they had never received information about incidents in the hospital and the form of follow-up, and thus could not answer questions in this dimension. Participants suggested management communication regarding the improvements made (60%) and review of workloads when replacing existing Standard

Operating Procedures (SOPs) (10%).

*“From me, sometimes new SOPs do not have proper follow-up evaluations. It made our difficulties not properly conveyed. Next thing we know, another incident has occurred, and we are wrong again.” (P5)*

*“Implementation of new SOPs is sometimes not accompanied by a new assessment of workload.” (P7)*

**Frequency of Error Reported.** The average dimension importance rating from participants was 6.3 out of 10. No difficulties were encountered during the assessment, although all participants admitted that they did not contribute at all to current incident reporting. The difficulty of implementation in the field is the absence of an anonymous reporting system (100%). Participants suggested providing communication media for the trendline of incidents seen, the number of incidents in shifts and units (70%), and the need for socialization of posters or videos of what events need to be reported (near-miss, risk, incident, and sentinel).

*“Management can re-socialize and periodically type of near-miss and incident that? It needs to be reported. There needs to be a real form of socialization about the improvements that occurred due to the latest trend of near-miss and incidents so that people have the motivation to report them.” (P3)*

**Management Support.** The average dimension importance rating from participants was 9.1 out of 10. No difficulties were encountered during the assessment; however, all participants felt that they did not receive management support in running the PSC. Participants suggested a form of regular management communication regarding various management activities and changes made and a review of the necessity of the current middle management.

*“Cannot say anything good because the support is not felt and cannot be observed.” (P2)*

Table 3. Descriptive PSC Dimension

Dimension	Average (%)
Teamwork Within Unit	95.23
Feedback Communication about Error	93.19
Teamwork Across Unit	91.46
Handoffs and Transitions	75.85
Blaming Culture	42.51
Communication Openness	60.35
Continuous Improvement	74.14
Frequency Error Reported	58.21
Management Support	59.38
Overall Patient safety	48.44
Supervisor/Manager Actions	78.42
Staffing	42.44

Table 4. Reliability and Validity of PSC Dimension

	Outer Loading	Cronbach's alpha	CRA	CRC	AVE
TWU	0.658				
FCE	0.586				
TAU	0.839	0.696	0.706	0.818	0.533
HT	0.808				

Abbreviation: Feedback Communication about Error (FCE), Handoffs and Transitions (HT), Teamwork Across Units (TAU), and Teamwork Within Units (TWU).

*“There needs to be a form of management communication when there is an incident and what kind of improvement has been and will be made in the future.”* (P10)

**Overall Patient Safety.** The average dimension importance rating for participants was 8.05 out of 10. Regarding the question of difficulty in rating the questionnaire by respondents, 40% found it difficult to answer because of double negative questions. The difficulty of implementation is due to the difficulty in accessing SOPs in the field because it was considered confidential documents (30%), SOPs between units can be different (30%), and the current SOPs are no longer suitable for working conditions (40%). All FGD participants suggested the need for SOP uniformity between units, SOP updates, and the implementation of a mentorship system for new workers.

*“There is a gap in field knowledge between new workers and old workers. New workers*

*find it difficult to access SOPs. Even though the existing SOPs are general, they do not describe detailed workflows.”* (P1)

*“SOPs are difficult to access because they are part of confidential documents.”* (P9)

*“The policies can differ between units, depending on the discretion of each head nurse. It is a good idea to make the SOP unified and structured clearly.”* (P2)

**Supervisor/Manager Expectation.** The average dimension importance rating from participants was 5.9 out of 10. The difficulty of implementation in the field is apparent because 30% reported that they do not know who their current direct supervisor is and 70% felt the absence of a clear chain of command with often different instructions from various levels of middle management. The lack of clarity as to who is the direct supervisor caused respondents to be confused as to which personnel

should be assessed in this dimension. Respondents suggested creating a chain of command policy at the operational and managerial levels.

*“It is necessary to create a clear communication flow for providing instructions.” (P8)*

*“There are often different instructions from various levels of middle management. My direct supervisor is actually the head nurse. But sometimes the head of the medical department and the head of nursing also come directly to give different instructions.” (P9)*

**Staffing.** During the FGD, it was found that the dimension is considered as most important (mean 10 out of 10). Regarding the question of the difficulty of rating the questionnaire by respondents, 80% of respondents did not know what was meant by temporary staff in the question because the status of workers in the first two years of their work was contract workers and not permanent workers. The difficulty of implementation in the field is that long working hours (>40 hours/week) are considered normal in hospitals. Demographic data showed 81.9% of workers worked >40 hours/ week. The respondents suggested the Human Resources Division conduct workload analysis in various work units immediately.

*“Here I feel that working hours of 50–70 hours per week have become normalized. Even though according to Manpower National Rules, we should only work 40 hours.” (P4)*

*“Yes, manpower workload analysis needs to be evaluated immediately. This normalization of long working hours is unhealthy, but in this hospital is considered normal.” (P6)*

## Discussion

The study's findings highlight the vitality of employing a variety of techniques to evaluate

patient safety culture, particularly if the findings are intended to lead to improvements. For instance, issues with service delivery were mentioned in practically all interview answers. If the quantitative results were the only data used to inform change, the management might be misinformed into believing that safety culture was viewed favorably. High workload is another issue identified in the interviews as being significant. Thus, improvement initiatives focus more intently on reducing excessive workload and recalculation of current load based on updated SOPs.

The importance of establishing a mechanism for anonymous incident reporting with continuous assessment and improvement of the interventions was also noted (Collins et al., 2020; Creswell & Clark, 2017). Implementation of the anonymous reporting system with training was associated with a statistically significant increase in the rate of reported medical errors (Farag et al., 2019). Leaders need to encourage interdisciplinary collaboration indirectly with anonymous reporting by fostering open communication between different healthcare disciplines, ensuring responsibility for PSC is embedded at all levels of an organization, and rewarding healthcare workers who actively contribute to creating a safer and more empathetic care environment (Basson et al., 2021). One of the most common issues was a lack of awareness of best practices within the team and unwritten hierarchies within the team (Etherington et al., 2021).

The importance of implementing a mentorship system for new workers is also highlighted. Mentorship is a vital component of the personal and professional success of new employees due to the unique challenges and opportunities presented (Rohatinsky & Jahner, 2016). Mentorship is a feasible approach to supporting newcomers that results in more efficient and effective integration, enculturation, and higher levels of retention. This knowledge transfer is essential for ensuring that healthcare practitioners are well-equipped to

navigate complex situations and make informed decisions related to patient safety (Wahyudyasa et al., 2023). Mentors play a pivotal role in shaping the attitudes and behaviors of mentees. Through mentorship, a culture of patient safety can be ingrained within the organizational fabric, influencing how individuals approach their work and prioritize patient safety initiatives. The mentorship system contributes to creating a psychologically safe learning environment. Healthcare professionals are more likely to engage in proactive safety behaviors and report errors in an environment where they feel supported and encouraged to learn from their experiences (Farag et al., 2019; Helo & Moulton, 2017).

Standardized procedures facilitate effective communication among healthcare team members. A shared understanding of SOPs ensures that all team members are on the same page, promoting seamless communication and collaboration in patient care. SOP uniformity simplifies training and onboarding processes for new staff members. When procedures are consistent across units, it becomes easier to train healthcare professionals, reducing the learning curve and ensuring a quicker integration into the patient safety culture (Caruso et al., 2016; Rohatinsky & Jahner, 2016). The importance of implementation of SOP uniformity between units and regular SOP is also highlighted. When realized and materialized as a component of an effective management system, SOP helps cultivate transparent functions, implement error prevention measures, facilitate corrective actions, and transfer knowledge and skill (Barbé et al., 2016). Standardizing operating procedures across different units ensures consistency in healthcare practices. This consistency is vital for minimizing variations in patient care processes and promoting a standardized approach to safety protocols (Lymperopoulos et al., 2015). SOP uniformity contributes to the reduction of error rates by providing clear, standardized guidelines for healthcare professionals. The likelihood of errors and deviations from established safety protocols

decreases when procedures are consistent (Helo & Moulton, 2017).

Effective teamwork is essential for safe, high-quality healthcare. Hospital leadership must identify barriers disrupting teamwork within the unit (Etherington et al., 2021; McEwan et al., 2017; Nygren et al., 2021; Welp et al., 2016). One of the most common issues was a lack of awareness of best practices and unwritten hierarchies within the team. Hospital leadership needs to encourage increasing familiarity with team members. The human resources team can help by creating an interprofessional lounge facilitating a collaborative team culture (Etherington et al., 2021). Effective teamwork is essential for safe, high-quality healthcare. Hospital leadership must identify barriers disrupting teamwork within the unit (Etherington et al., 2021; McEwan et al., 2017; Nygren et al., 2021; Welp et al., 2016). Various viewpoints exist among doctors and nurses regarding the teamwork they engage in (Welp et al., 2016). In general, based on previous studies, doctors seem to be happier with doctor-nurse teamwork than nurses. Previous findings imply that several problems could be to blame for the differing overall evaluation of collaboration. Nurses said that compared to doctors, it was more challenging for them to speak up, conflicts were not effectively resolved, more input was required in decision-making, and nursing opinion was not well appreciated.

Disparate views on teamwork may also be a significant factor in nurses' discontent with their line of work, which has resulted in a major nursing shortage (Nygren et al., 2021). Studies on improving team functioning in health care focus on three types of interventions: training, tools, and organizational (re)-design. Training is divided into principle-based (subcategories: crew resource management based training and team strategies and tools to enhance performance and patient safety [TeamSTEPPS]), method-based (simulation-based training), and general team train-

ing. Tools are instruments that could be implemented relatively independently to structure (subcategories: situation, background, assessment, and recommendation (SBAR), (de)briefing checklists, and rounds), facilitate (through communication technology), or trigger teamwork (through information provision and monitoring). Organizational (re)design focuses on intervening in structures, which will consequently improve team functioning (Buljac-Samardzic et al., 2020). Hospital leadership needs to encourage interdisciplinary collaboration by fostering open communication between different healthcare disciplines, ensuring that responsibility for infection prevention is embedded at all levels of an organization, and rewarding healthcare workers who actively contribute to creating a safer and more empathetic care environment. Regular team meetings and brainstorming sessions are needed to provide opportunities for constructive dialogue, while leaders must prioritize active listening and empathy in addressing team concerns (Sandoval, 2022; Welp et al., 2016).

## Conclusion

In conclusion, our investigation into the eight dimensions of patient safety culture using a mixed-method research approach has shed light on the multifaceted factors contributing to their invalidity. By delving into both quantitative and qualitative insights provided by healthcare professionals through Focus Group Discussions, we have uncovered critical nuances that extend beyond mere quantitative metrics. The qualitative insights gleaned from healthcare professionals through Focus Group Discussions have illuminated the nuanced human aspects of safety culture, which traditional measurements may overlook. These findings not only explain why these dimensions fell short of capturing essential aspects of patient safety culture but also offer a pathway for improvement. As we strive for a more consistent and robust patient safety culture in healthcare, we must address the underlying

causes and develop strategies that bridge these validity gaps.

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## AUTHOR GUIDELINES: ORIGINAL RESEARCH

Affiliates and address of the authors. Give the number according to the name of the author, for example 1. Department of Maternal and Women's Health Nursing, Faculty of Nursing, Universitas Indonesia, Prof. Dr. Bahder Djohan Street, Depok, West Java – 16424. Correspondence address is email address of the one of the author, for example anandita12@ui.ac.id.

The use of abbreviations is permitted, but the abbreviation must be written in full and complete when it is mentioned for the first time and it should be written between parentheses. Terms/Foreign words or regional words should be written in italics. Notations should be brief and clear and written according to the standardized writing style. Symbols/signs should be clear and distinguishable, such as the use of number 1 and letter l (also number 0 and letter O). Avoid using parentheses to clarify or explain a definition. The organization of the manuscript includes **Introduction, Methods** or **Experimental, Results, Discussion, Conclusions, and References**. **Acknowledgement** (if any) is written after **Conclusion** and before **References** and narratively, not numbered. The use of subheadings is discouraged. Between paragraphs, the distance is one space. Footnote is avoided.

This manuscript uses *American Psychological Association (APA)* manual style as citation. When using APA format, follow the author-date method of in-text citation. This means that the author's last name and the year of publication for the source should appear in the text, for example, (Jones, 1998), and a complete reference should appear in the reference list at the end of the paper. Citation can be put at the beginning of the sentence, for example Johnson (2005) states that ... or the source put at the end of a sentence for examples ... (Purwanto, 2004). See the complete format on this link <https://owl.english.purdue.edu/owl/resource/560/02/>

Introduction contains justification of the importance of the study conducted. Novelty generated from this study compared the results of previous studies or the umbrella of existing knowledge needs to be clearly displayed. Complete it with main reference used. State in one sentence question or research problems that need to be answered by all the activities of the study. Indicate the methods used and the purpose or hypothesis of the study. The introduction does not exceed five paragraphs.

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### **Methods** (14 point font, boldface, cap in the first letter of headings)

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Method contains the design, the size, criteria and method of sampling, instruments used, and procedures collecting, processing, and analysis of the data. When using a questionnaire as instrument, explain the contents briefly and to measure which variables. Validity and reliability of instruments should also be explained. In the experimental or intervention studies need to be explained interventional procedure or treatment is given. In this section it should explain how research ethics approval was obtained and the protection of the rights of the respondents imposed. Analysis of data using computer programs needs not be written details of the software if not original. Place/location of the study is only mentioned when it comes to study. If only as a research location, the location details not worth mentioning, just mentioned vague, for example, "... at a hospital in Tasikmalaya."

For the qualitative study, in this section needs to explain how the study maintain the validity (trustworthiness) data obtained. The methods section written brief in two to three paragraphs.

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### **Results**

(One blank single space line, 10 point font)

The findings are sorted by the objectives of the study or the research hypothesis. The results do not display the same data in two forms namely tables/ images /graphics and narration. No citations in the

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results section. The average value (mean) must be accompanied by a standard deviation. Writing tables using the following conditions.

Table only uses 3 (three) row lines (do not use a column line), the line heading, and the end of the table (see example ). Table is written with Times New Roman size 10pt and placed within a single space below the title table. Table titles is written with font size 9pt bold, capital letters at the beginning of the word and placed on the table with the format as shown in the examples that do not use the column lines. Numbering tables are using Arabic numerals. The table framework is using lines size 1 pt. If the table has many columns, it can use one column format at half or full page. If the title in each table column is long and complex, the columns are numbered and its description given at the bottom of the table. Mean, SD, and t-test values should include value of 95% CI. Significance value is put with not mention P at first. Example: The mean age 25.4 years intervention group (95% CI). Based on the advanced test between intervention and control groups showed significant (example: p= 0.001; CI= ... - ... ).

Images are placed symmetrically in columns within a single space of a paragraph. Pictures are numbered and sorted by Arabic numerals. Captions placed below the image and within one single space of the image. Captions are written by using 10pt font size, bold, capital letters at the beginning of the word, and placed as in the example. The distance between the captions and paragraphs are two single spaced.

Images which have been published by other authors should obtain written permission from the author and publisher. Include a printed image with good quality in a full page or scanned with a good resolution in the format {file name}.jpeg or {file name}.tiff. When the images are in the photograph format, include the original photographs. The image will be printed in black and white, unless it needs to be shown in color. The author will be charged extra for color print if more than one page. The font used in the picture or graphic should be commonly owned by each word processor and the operating system such as Symbol, Times New Roman, and Arial with size not less than 9 pt. Image files which are from applications such as Corel Draw, Adobe Illustrator and Aldus Freehand can give better results and can be reduced without changing the resolution.

Table and image are not integrated with the contents of the manuscript, put after reference or at the end of the manuscript.

For the qualitative study, the findings commonly are written in the form of participants quotes. Table format is rarely used except to describe the characteristics of the participants, or recapitulation of the themes or categories. If the quote is not more than 40 words, then use quotation marks ("") at the beginning and at the end of a sentence and include participants/ informants which give statements without the need to create separate paragraphs. Ellipsis (...) is only used to change a word that is not shown, instead of a stop sign/pause. See the following example.

Due to the ongoing process, the women experiencing moderate to severe pain in the knees, ankles, legs, back, shoulders, elbows, and/or their fingers, and they are struggling to eliminate the pain. To alleviate pain, they look for the cause of the pain. One participant stated that, "... I decided to visit a doctor to determine the cause of the pain is. Now I'm taking medication from the doctor in an attempt to reduce this pain" (participant 3)

Here is an excerpt example of using block quotations if the sentences are 40 or more. Use indentation 0.3"

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As discussed earlier, once the participants had recovered from the shock of the diagnosis of the disease, all participants decided to fight for their life. For most of them, the motivation for life is a function of their love for their children; namely child welfare, which being characteristic the pressure in their world. Here is an example of an expression of one of the participants:

I tried to suicide, but when I think of my children, I cannot do that [crying]. I thought, if I die, no one will take care of my children. Therefore, I decided to fight for my life and my future. They (children) were the hope of my life (participant 2).

### **Discussion**

Describe the discussion by comparing the data obtained at this time with the data obtained in the previous study. No more statistical or other mathematical symbols in the discussion. The discussion is directed at an answer to the research hypothesis. Emphasis was placed on similarities, differences, or the uniqueness of the findings obtained. It is need to discuss the reason of the findings. The implications of the results are written to clarify the impact of the results the advancement of science are studied. The discussion ended with the various limitations of the study.

### **Conclusion**

Conclusions section is written in narrative form. The conclusion is the answer of the hypothesis that leads to the main purpose of the study. In this section is not allowed to write other authors work, as well as information or new terms in the previous section did not exist. Recommendation for further research can be written in this section.

### **Acknowledgement (if any)**

Acknowledgement is given to the funding sources of study (donor agency, the contract number, the year of accepting) and those who support that funding. The names of those who support or assist the study are written clearly. Names that have been mentioned as the authors of the manuscripts are not allowed here.

### **References (14pt, *boldface*, Capital letter in the beginning of the Word)**

Use the most updated references in the last 10 years. Reference is written with Times New Roman font size 11 pt, single space, the distance between the references one enter. The references use the hanging, which is on the second line indented as much as 0.25", right justified. The references only contain articles that have been published, and selected the most relevant to the manuscript. It prefers primary references. The references format follows the "name-years" citation style (APA style 7th edition). All sources in the reference must be referenced in the manuscript and what was in the manuscript should be in this reference. The author should write the family/last name of sources author and year of publication in parentheses use, for example (Potter & Perry, 2006) or Potter and Perry (2006). Write the first author's name and "et al.", if there are three or more authors.

Examples:

#### **Journal**

Author, A.A., Author, B.B., & Author, C.C. (year). Article title: Sub-title. *Journal Title*, *volume* (issue number), page numbers.

## AUTHOR GUIDELINES: ORIGINAL RESEARCH

Wu, S.F.V., Courtney, M., Edward, H., McDowell, J., Shortridge-Baggett, L.M., & Chang, P.J. (2007). Self-efficacy, outcome expectation, and self-care behavior in people with type diabetes in Taiwan. *Journal of Clinical Nursing*, 16 (11), 250–257.

References with two or more authors (up to 20 authors) write all author's names. If an article has 21 authors or more, list the first 19 authors, then insert an ellipsis (...) and then the last name and first initials of the last author. Example:

Wolchik, S.A., West, S.G., Sandler, I.N., Tein, J., Coatsworth, D., Lengua, L., Johnson, A., Ito, H., Ramirez, J., Jones, H., Anderson, P., Winkle, S., Short, A., Bergen, W., Wentworth, J., Ramos, P., Woo, L., Martin, B., Josephs, M., ... Brown, Z. (2005). *Study of the brain. Psychology Journal*, 32 (1), 1–15. doi: 10.1037/1061-4087.45.1.11.

### Conference Proceeding

Schnase, J.L., & Cunnias, E.L. (Eds.). (1995). Proceedings from CSCL '95: *The First International Conference on Computer Support for Collaborative Learning*. Erlbaum.

### Newspaper (no author's name)

Generic Prozac debuts. (2001, August 3). The Washington Post, pp. E1, E4.

It's subpoena time. (2007, June 8). New York Times. <https://www.nytimes.com/2007/06/08/opinion/08fri1.html>

### Book

Author, A.A. (Year). *Source title: Capital letter in the beginning of the subtitle*. Publisher.

Peterson, S.J., & Bredow, T.S. (2004). *Middle range theories: Application to nursing research*. Lippincott Williams & Wilkins.

### Book chapter

Author, A.A. (Year). Chapter title: Capital letter in the beginning of the subtitle. In Initial, Surname (Author's name/book editor) (eds), *Book title*. Publisher.

Hybron, D.M. (2008). Philosophy and the science of subjective well-being. In M. Eid & R.J. Larsen (Eds.), *The science of subjective well-being* (pp.17–43). Guilford Press.

### Translated book

Ganong, W.F. (2008). *Fisiologi kedokteran* (Ed ke-22). (Petrus A., trans). McGraw Hill Medical. (Original book published 2005).

### Thesis/Dissertation

*If available in the database*

Rockey, R. (2008). An observational study of pre-service teachers' classroom management strategies (Publication No. 3303545) [Doctoral dissertation, Indiana University of Pennsylvania]. ProQuest Dissertations and Theses Global.

Gerena, C. (2015). Positive thinking in dance: The benefits of positive self-talk practice in conjunction with somatic exercises for collegiate dancers [Master's thesis, University of California Irvine]. University of California, Scholarship. <https://escholarship.org/uc/item/1t39b6g3>

*If not published*

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Last-name, A.A. (year). *Dissertation/thesis title*. (Unpublished doctoral dissertation/master thesis). Institution Name, Location.

Considine, M. (1986). *Australian insurance politics in the 1970s: Two case studies*. (Unpublished doctoral dissertation). University of Melbourne, Melbourne, Australia.

## Database Article

Author, A.A., Author, B.B., & Author, C.C. (Year pub). Title of article. *Title of Journal*, Volume (Issue), pp– pp. doi: xx.xxxxxxxx [OR] Retrieved from URL of publication's home page

Borman, W.C., Hanson, M.A., Oppler, S.H., Pulakos, E.D., & White, L.A. (1993). Role of early supervisory experience in supervisor performance. *Journal of Applied Psychology*, 78 (8), 443–449. Retrieved from <http://www.eric.com/jdlsiejls/supervisor/early937d>

## Database article with DOI (Digital Object Identifier)

Brownlie, D. (2007). Toward effective poster presentations: An annotated bibliography. *European Journal of Marketing*, 41 (11/12), 1245–1283. doi: 10.1108/03090560710821161.

## Other online source

Author, A.A. (year). Title of source. Retrieved from URL of publication's home page

## Article from website

Exploring Linguistics. (1999, August 9). Retrieved from <http://logos.uoregon.edu/explore/orthography/chinese.html#tsang>

## Online article

Becker, E. (2001, August 27). Prairie farmers reap conservation's rewards. *The New York Times*, pp. 12–90. Retrieved from <http://www.nytimes.com>

## Appendices

Appendices are only used when absolutely necessary, placed after the references. If there is more than one attachment/appendix then sorted alphabetically.

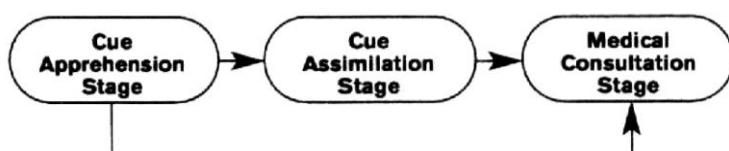
Here is an example of a table

Table 1. The Characteristics of the Respondents (capital letters at the beginning of the word 11 pt, left justify)  
(One blank single space line, 10 pt)

Client's Initial	Age	Major Problem
Mr. BN	56	Aggressiveness
Mr. MA	40	Withdrawal
Mr. AS	45	Swing Mood

\*table footnotes (if necessary)

Here is an example of an image



(One blank single space line, 10 pt)

Figure 1. The Process of Cardiac Sensitivity Cues (Capital Letters in the Beginning of the Words, 11pt)

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### ARTICLE TITLE (all caps, 14-point font, boldface, centered, Maximum 16 words) (One blank single space line, 14 pt)

**Abstract** (10-pt, bold, italics)

(One blank single space line, 10 pt)

**Article Title.** Abstract should be written using Times New Roman font, size 10pt, not-italics, right justify, and one paragraph-unstructured with single spacing, completed with English title written in bold at the beginning of the English abstract. The Abstract should be “short and sweet”. It should be around 100–250 words. Abbreviations or references within the Abstract should not be used. The Abstract should include background, case illustration, and conclusion. Background includes an introduction about why this case is important and needs to be reported. Please include information on whether this is the first report of this kind in the literature. Case illustration includes brief details of what the patient(s) presented with, including the patient’s age, sex and ethnic background. Conclusions is a brief conclusion of what the reader should learn from the case report and what the clinical impact will be. Is it an original case report of interest to a particular clinical specialty of nursing or will it have a broader clinical impact across nursing? Are any teaching points identified? If manuscripts are not from Indonesia, the Indonesian abstract will be assisted by the editor.

(One blank single space line, 10 pt)

**Keywords:** This section consists of three to six keywords/phrases representing the main content of the article. It is important for indexing the manuscript and easy online retrieval. It is written in English, alphabetical order (10-point font), and gives commas between words/phrases.

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**Abstrak** (10 pt, bold, senter)

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*Judul Artikel. Abstrak harus ditulis menggunakan huruf Times New Roman, ukuran 10pt, huruf miring, rata kanan, dan satu paragraf-tidak terstruktur dengan spasi tunggal. Abstrak harus “pendek dan manis”. Seharusnya sekitar 100–250 kata. Singkatan atau referensi dalam Abstrak tidak boleh digunakan. Abstrak harus mencakup latar belakang, ilustrasi kasus, dan kesimpulan. Latar belakang mencakup pengantar tentang mengapa kasus ini penting dan perlu dilaporkan. Harap sertakan informasi tentang apakah ini adalah laporan pertama dari jenis ini dalam literatur. Ilustrasi kasus mencakup rincian singkat tentang apa yang pasien sajikan, termasuk usia pasien, jenis kelamin dan latar belakang etnis. Kesimpulan merupakan kesimpulan singkat dari apa yang pembaca harus pelajari dari laporan kasus dan dampak klinisnya. Apakah laporan kasus asli yang menarik bagi area spesialis keperawatan tertentu atau apakah itu berdampak klinis yang lebih luas?*

(One blank single space line, 10 pt)

**Kata Kunci:** Bagian ini terdiri dari tiga sampai enam kata kunci/frase yang mewakili konten utama artikel. Kata kunci ini penting untuk indeksasi manuskrip dan pencarian daring dengan mudah. Itu ditulis dalam bahasa Inggris, diurutkan berdasarkan abjad (font 10 huruf, huruf miring), memberikan koma di antara kata-kata/frasa.

(Three blank single space lines, 12-point font)

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### Introduction (14-point font, boldface, cap in the first letter of headings)

(One blank single space line, 10-point font)

The manuscript is written with Times New Roman font size 12pt, single-spaced, left and right justified, on one-sided pages, paper in one column and on A4 paper (210 mm x 297 mm) with the upper margin of 3.5 cm, lower 2.5 cm, left and right each 2 cm. The manuscript including the graphic contents and tables should be around 3500–4500 words (exclude references). If it far exceeds the prescribed length, it is recommended to break it into two separate manuscripts. Standard English grammar must be observed. The title of the article should be brief and informative and it should not exceed 16 words. The keywords are written after the abstract.

(Between paragraphs are spaced one blank, single spaced, without indentation)

The title should contain the main keyword and do not use abbreviations, numbering around 16 words. Authors need to write a short title is also desirable to be written as a page header on each journal page. Authors should not just write words such as study/ relationship/ influence in the title because the title should indicate the results of the study, for example, "Reduction of blood sugar through exercises diabetes in the elderly".

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The information about the author(s) such as full name (without academic title), affiliates, and address are wrote on the separate file (title page). Affiliates and address of the authors. Give the number according to the name of the author, for example 1. Department of Maternal and Women's Health Nursing, Faculty of Nursing, Universitas Indonesia, Prof. Dr. Bahder Djohan Street, Depok, West Java – 16424. Correspondence address is email address of the one of the author, for example anandita12@ui.ac.id.

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The Introduction or Background section should explain the background of the case, including the disorder or nursing problems, usual presentation and progression, and an explanation of the presentation if it is a new disease or disorder. If it is a case discussing an adverse intervention the Introduction should give details of intervention's common use and any previously reported side effects. It should also include a brief literature review. This should introduce to the case report from the stand point of those without specialist knowledge in the area, clearly explaining the background of the topic. It should end with a very brief statement of what is being reported in the article.

The Introduction should be in brief, stating the purpose of the study. Provide background that puts the manuscript into context and allows readers outside the field to understand the significance of the study. Define the problem addressed and why it is important and include a brief review of the key literature. Note any relevant controversies or disagreements in the field. Conclude with a statement of the aim of the work and a comment stating whether that aim was achieved.

(One blank single space line, 12-point font)

### **Case Illustration** (14-point font, boldface, cap in the first letter of headings)

(One blank single space line, 10-point font)

This should present all relevant details concerning the case. This section can be divided into separate sections presented with appropriate subheading, such as history and presenting conditions, intervention, outcome, etc. This should provide concerned details of the case with relevant demographic information of the patient concealing their identification (without adding any details that could lead to the identification of the patient), medical history, observed symptoms and describe any tests or treatments done on the patient. If it is a case series, then details must be included for all patients. Discuss the significance and rarity of findings with referencing to the previous studies.

## **AUTHOR GUIDELINES: CASE REPORT**

If it is need to present table(s) and or image(s), some rules should be followed. Table only uses 3 (three) row lines (do not use a column line), the line heading, and the end of the table (see example). Table is written with Times New Roman size 10-pt and placed within a single space below the title table. Table titles is written with font size 9-point bold, capital letters at the beginning of the word and placed on the table with the format as shown in the examples that do not use the column lines.

Numbering tables are using Arabic numerals. The distance between table and the paragraph is a single space. The table framework is using lines size 1 pt. If the table has many columns, it can use one column format at half or full page. If the title in each table column is long and complex, the columns are numbered and its description given at the bottom of the table. The table is placed in the highest or the very bottom of each page and do not flanked by sentence. Avoid interrupted the table by page.

Images are using a single space of a paragraph. If the size of the image passes through the column width then the image can be placed with a single column format. Pictures are numbered and sorted by Arabic numerals. Captions placed below the image and within one single space of the image. Captions are written by using 10pt font size, bold, capital letters at the beginning of the word, and placed as in the example. The distance between the captions and paragraphs are two single spaced.

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Table and image are not integrated with the contents of the manuscript, put after reference or at the end of the manuscript.

### **Discussion**

The discussion section should contain major interpretations from the findings and results in comparison to past studies. The significance of the findings and case presentation should be emphasized in this section against previous findings in the subject area.

This section should evaluate the patient case for accuracy, validity, and uniqueness and compare or contrast the case report with the published literature. The authors should briefly summarize the published literature with contemporary references.

### **Conclusion**

Conclusions section is written in narrative form. This section should conclude the Case reports and how it adds value to the available information. Explain the relevance and significance of their findings to the respective field in a summary briefly. This section is not allowed to write other authors work, as well as information or new terms in the previous section did not exist. Recommendation for further study can be written in this section.

# AUTHOR GUIDELINES: CASE REPORT

## Acknowledgements

Acknowledgement is given to the funding sources of study (donor agency, the contract number, the year of accepting) and those who support that funding. The names of those who support or assist the study are written clearly. Names that have been mentioned as the authors of the manuscripts are not allowed here.

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Examples:

### Journal

Author, A.A., Author, B.B., & Author, C.C. (year). Article title: Sub-title. *Journal Title, volume* (issue number), page numbers.

Wu, S.F.V., Courtney, M., Edward, H., McDowell, J., Shortridge-Baggett, L.M., & Chang, P.J. (2007). Self-efficacy, outcome expectation, and self-care behavior in people with type diabetes in Taiwan. *Journal of Clinical Nursing, 16* (11), 250–257.

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Wolchik, S.A., West, S.G., Sandler, I.N., Tein, J., Coatsworth, D., Lengua, L., Johnson, A., Ito, H., Ramirez, J., Jones, H., Anderson, P., Winkle, S., Short, A., Bergen, W., Wentworth, J., Ramos, P., Woo, L., Martin, B., Josephs, M., ... Brown, Z. (2005). *Study of the brain. Psychology Journal, 32* (1), 1–15. doi: 10.1037/1061-4087.45.1.11.

### Conference Proceeding

Schnase, J.L., & Cunnias, E.L. (Eds.). (1995). Proceedings from CSCL '95: *The First International Conference on Computer Support for Collaborative Learning*. Erlbaum.

### Newspaper (no author's name)

Generic Prozac debuts. (2001, August 3). The Washington Post, pp. E1, E4.

It's subpoena time. (2007, June 8). New York Times. <https://www.nytimes.com/2007/06/08/opinion/08fri1.html>

### Book

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## AUTHOR GUIDELINES: CASE REPORT

Peterson, S.J., & Bredow, T.S. (2004). *Middle range theories: Application to nursing research*. Lippincott Williams & Wilkins.

### Book chapter

Author, A.A. (Year). Chapter title: Capital letter in the beginning of the subtitle. In Initial, Surname (Author's name/book editor) (eds), *Book title*. Publisher.

Hybron, D.M. (2008). Philosophy and the science of subjective well-being. In M. Eid & R.J. Larsen (Eds.), *The science of subjective well-being* (pp.17–43). Guilford Press.

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### Thesis/Dissertation

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Rockey, R. (2008). An observational study of pre-service teachers' classroom management strategies (Publication No. 3303545) [Doctoral dissertation, Indiana University of Pennsylvania]. ProQuest Dissertations and Theses Global.

Gerena, C. (2015). Positive thinking in dance: The benefits of positive self-talk practice in conjunction with somatic exercises for collegiate dancers [Master's thesis, University of California Irvine]. University of California, Scholarship. <https://escholarship.org/uc/item/1t39b6g3>

#### *If not published*

Last-name, A.A. (year). *Dissertation/thesis title*. (Unpublished doctoral dissertation/master thesis). Institution Name, Location.

Considine, M. (1986). *Australian insurance politics in the 1970s: Two case studies*. (Unpublished doctoral dissertation). University of Melbourne, Melbourne, Australia.

### Database Article

Author, A.A., Author, B.B., & Author, C.C. (Year pub). Title of article. *Title of Journal*, Volume (Issue), pp– pp. doi: xx.xxxxxxxx [OR] Retrieved from URL of publication's home page

Borman, W.C., Hanson, M.A., Oppler, S.H., Pulakos, E.D., & White, L.A. (1993). Role of early supervisory experience in supervisor performance. *Journal of Applied Psychology*, 78 (8), 443–449. Retrieved from <http://www.eric.com/jdlsiejls/supervisor/early937d>

#### *Database article with DOI (Digital Object Identifier)*

Brownlie, D. (2007). Toward effective poster presentations: An annotated bibliography. *European Journal of Marketing*, 41 (11/12), 1245–1283. doi: 10.1108/03090560710821161.

### Other online source

Author, A.A. (year). Title of source. Retrieved from URL of publication's home page

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Exploring Linguistics. (1999, August 9). Retrieved from <http://logos.uoregon.edu/explore/orthography/chinese.html#tsang>

#### *Online article*

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## AUTHOR GUIDELINES: CASE REPORT

### Appendices

Appendices are only used when absolutely necessary, placed after the references. If there is more than one attachment/appendix then sorted alphabetically.

Here is an example of a table

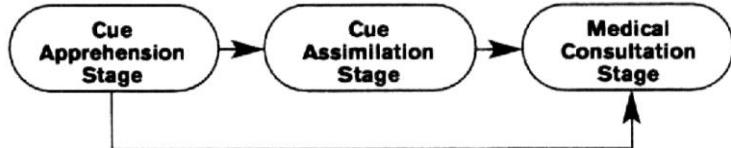
Table 1. The Characteristics of the Respondents (capital letters at the beginning of the word 11 pt, left justify)

(One blank single space line, 10 pt)

Client's Initial	Age	Major Problem
Mr. BN	56	Aggressiveness
Mr. MA	40	Withdrawal
Mr. AS	45	Swing Mood

\*table footnotes (if necessary)

Here is an example of an image



(One blank single space line, 10 pt)

Figure 1. The Process of Cardiac Sensitivity Cues (Capital Letters in the Beginning of the Words, 11pt)

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