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Care Burden of Family Caregivers of Elderly Relatives with Breast Cancer in the Asian Culture: Integrative Review

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Abstract

Breast cancer is the most common type of cancer and a major cause of death in elderly women. In Asia, the roles and responsibilities of family caregivers of elderly relatives with breast cancer vary across cultural and social contexts, but the care burden and its impacts on caregivers' quality of life have been reported globally. Therefore, this review aims to summarize existing evidence of the care burden and experiences of family caregivers caring for elderly relatives with breast cancer in Asian cultures. This integrative review used databases, including MEDLINE, Cumulative Index of Nursing and Allied Health Literature (CINAHL), and Scopus, to conduct a comprehensive search of all studies published in English between 1994 and 2016 in relation to the topic at hand, yielding 322 articles, eight of which met the eligibility criteria and were included in the review. Three domains of the care burden, including physical, psychological, and financial, were identified and reported as varying in degree across cultures. Caring for elderly patients with breast cancer in Asian cultures was found to be performed on passionate grounds involving love, sympathy, relationships, and attachments. The positive and negative experiences among family caregivers were found to be associated with cultural factors, including beliefs, social norms, traditional practices, and religion. A stronger family bond and sense of togetherness within the family were expressed as positive, whereas caring for the elderly was described as burdensome, or negative. While the caregiver role is perceived as integral to the Asian family caregiver's life, they nonetheless experience physical, psychological, and financial burdens related to the care. Thus, the deep insight into the burden of family caregivers offered herein warrants the provision of appropriate support from health professionals to family caregivers.

Keywords: Asian culture, breast cancer, care burden, elderly patient, family caregiver

Abstrak

Beban Pengasuhan Pelaku Rawat di Keluarga dalam Merawat Lansia dengan Kanker Payudara di Asia: Tinjauan Integratif. *Kanker payudara adalah jenis kanker yang paling umum dan merupakan penyebab utama kematian pada perempuan lansia. Dalam konteks sosial dan budaya di Asia, peran dan tanggung jawab yang dimiliki oleh* family caregiver *dalam mendampingi pasien lansia dengan kanker payudara bervariasi. Meskipun demikian, beban pengasuhan dan dampaknya terhadap kualitas hidup* caregiver *dilaporkan dialami di seluruh dunia. Oleh karena itu, studi ini bertujuan untuk mengumpulkan bukti tentang beban pengasuhan dan pengalaman* family caregiver *di Asia dalam merawat kerabat lansia yang menderita kanker payudara. Tinjauan integratif ini menggunakan kumpulan data dari* MEDLINE, Cumulative Index of Nursing and Allied Health Literature (CINAHL), *dan* Scopus, *untuk melakukan pencarian komprehensif dari semua studi terkait topik beban* family caregiver *yang diterbitkan dalam bahasa Inggris antara tahun 1994 dan 2016. Pencarian komprehensif ini menemukan 322 artikel yang delapan di antaranya memenuhi kriteria kelayakan untuk ditinjau secara integratif. Identifikasi terhadap tiga domain dari beban pengasuhan; fisik, psikologis, dan keuangan, menemukan bahwa tingkat beban tersebut bervariasi antara satu budaya dan yang lainnya. Ditemukan bahwa merawat pasien lansia dengan kanker payudara dalam budaya Asia dilakukan atas dasar dorongan jiwa yang melibatkan cinta, simpati, hubungan, dan keterikatan. Pengalaman positif dan negatif yang dialami* oleh family caregiver *diasosiasikan dengan faktor budaya, termasuk kepercayaan, norma sosial, praktik tradisional, dan agama. Ikatan keluarga yang lebih kuat dan rasa kebersamaan dalam keluarga diekspresikan sebagai pengalaman positif, sedangkan merawat lansia digambarkan sebagai beban yang bersifat negatif. Meskipun peran sebagai pengasuh dianggap sebagai bagian yang penting dari kehidupan* family caregiver *di Asia, mereka tetap mengalami beban fisik, psikologis, dan keuangan. Studi ini bertujuan memberikan pengetahuan yang mendalam tentang beban* family caregiver *agar dapat digunakan dalam menjamin penyediaan dukungan yang tepat dari tenaga kesehatan profesional kepada* family caregiver.

Kata Kunci: *beban pengasuhan; budaya Asia;* family caregiver*; kanker payudara; pasien lansia*

Introduction

Globally, breast cancer was reported to be the most common cancer in 2020, with approximately 2.3 million new cases (11.7% of all cancer cases) and 685,000 deaths (Sung et al., 2021), exposing the disease as the biggest killer in more than 100 countries worldwide, particularly low- to middle-income countries (Lei et al., 2021; Sung et al., 2021); in China, breast cancer accounts for approximately 24% of all cancer cases nationwide (Cao et al., 2021). It is generally acknowledged that breast cancer impacts entire families, not only the affected individual, as the families might carry a heavy burden in and responsibility for supporting and caring for cancer patients at home (Beaver & Witham, 2007). Breast cancer places a burden not only on life, but also on caregivers' physical, psychological, and financial conditions (Schwartz et al., 2021; Vashistha et al., 2019). Therefore, there is no doubt that the quality of life of caregivers of cancer patients has been reduced by factors related to the caring role and its responsibilities (Meecharoen et al., 2013). The important roles of informal family caregivers unfortunately lead to added responsibilities in caring for cancer patients, including routine care related to food intake, medicine intake, home treatments, and any arrangements for urgent care. In addition, caregivers must abandon some of their activities of daily living and related to their usual role when undertaking the numerous tasks involved in caring (National Cancer Institute, 2021; PDQ Supportive and Palliative Care Editorial Board, 2016).

In Asia, the roles and responsibilities of family members when caring for elderly relatives with breast cancer vary across cultural and social contexts, but the care burden and its impact on the quality of life of caregivers have been reported globally. There are various viewpoints among both males and females who provide care to a family member in a Western or Asian country. Perspectives of care requirements in these two contexts differ in terms of background, culture, relationships, religion, and facilities (Kristanti et al., 2021; Takahashi et al., 2022). Family caregivers have been recognized in Western countries and been assigned significance in terms of their individual needs, the facilities, and the quality of life of the cancer patient for whom they care. In contrast, Asian countries are more concerned with spiritual health, family obligations and care tasks, and economic circumstances (Takahashi et al., 2022). As such, in these regions, becoming a caregiver is a difficult decision, because most are unprepared to shoulder the subsequent burden, which may impact their quality of life (Fried et al., 2021; Pickering et al., 2021). There is limited evidence of a knowledge of cultural norm in relation to the burden of care among family caregivers of patients with breast cancer in the Asian context. As such, this review aims to summarize existing evidence of the burden and experiences of family members providing care to elderly relatives with breast cancer in Asian cultures.

Methods

This review deployed an integrative literature review method, including a range of evidence and diverse methodologies, both quantitative and qualitative, to establish a comprehensive overview and insight of a particular topic. The current review was undertaken through the updated methodology for an integrative review (Torraco, 2005; Whittemore & Knafl, 2005), and it aligns with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines and checklist for the reporting of systematic reviews (Moher et al., 2015). Further, the review was performed using the Critical Appraisal Skills Programme (CASP) (2018).

Information Sources and Search. A comprehensive search was undertaken in the MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Scopus databases for articles published in English between 1994 and 2016. Four concepts were used to choose keywords, as follows: 1) "caregiver," "family caregiver," "carer," and "caregiving";

2) "burden," "burdensome," "difficulty," "family burden," "responsibility," and "experience"; 3) "breast cancer in older women," "elderly patient with breast cancer," "breast cancer," "older women," and "senior women"; and 4) "Asian," "Asian culture," "Asian countries," and "Asian context."

To broaden the results, an advanced search with the Boolean operator "or" was conducted for each concept, and to obtain the specific search results, the Boolean operator "and" was used to combine all search results. Finally, to achieve a comprehensive search, the reference lists of the reviewed articles were manually searched, and all search results were managed using an EndNoteX9 Library.

Eligibility Criteria

Types of Participants. This review considered studies that involve family caregivers of women patients with breast cancer in Asian countries.

Types of Interest. Studies that investigated or explored the burden of care among family caregivers of women with breast cancer are considered.

Types of Studies. This review included observational studies that employed a quantitative or qualitative method or a mix of the two approaches at levels I to IV of the National Health and Medical Research Council (NHMRC) evidence hierarchy (NHMRC, 2009), and this review excluded review or meta-analysis articles.

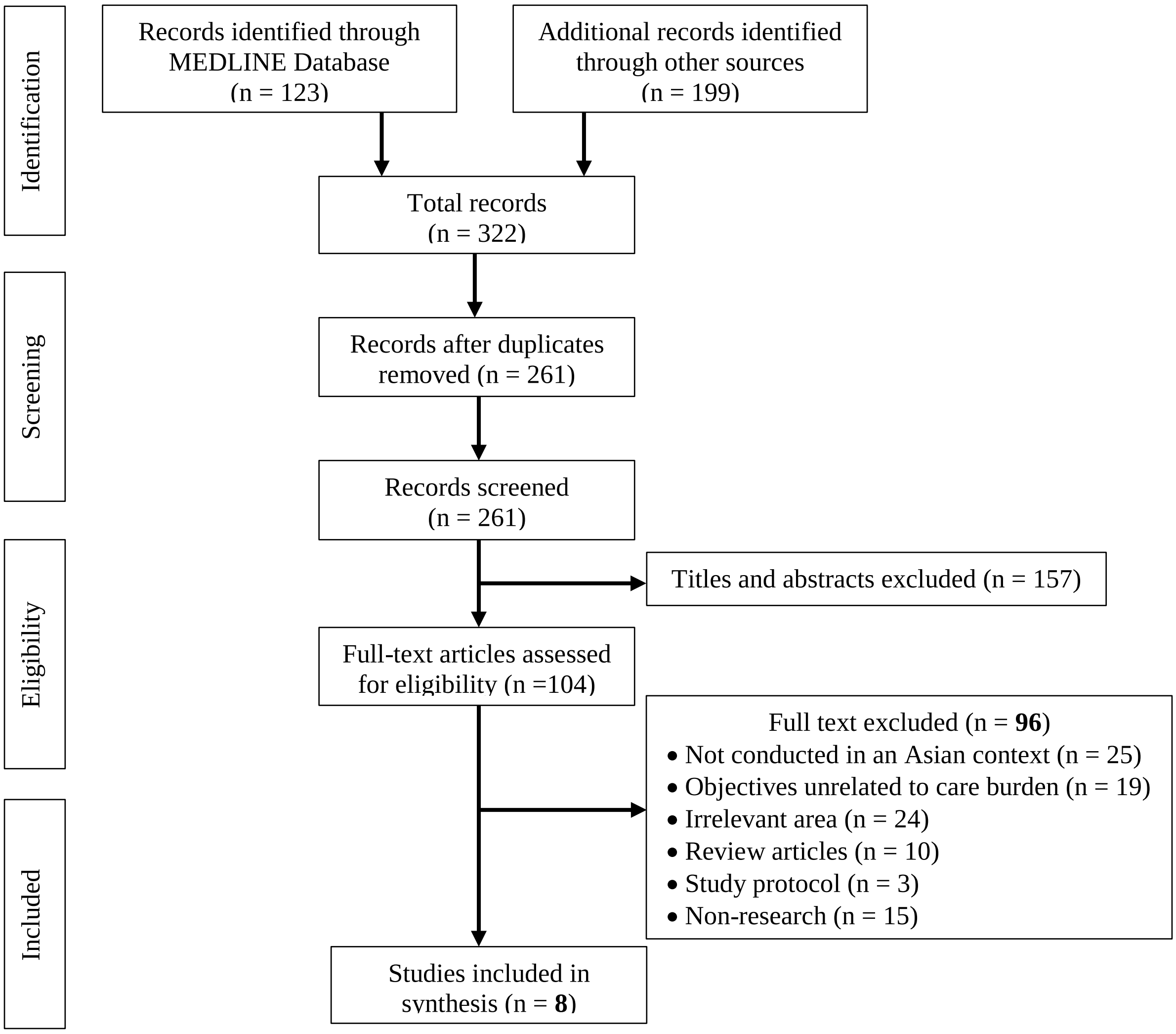

Figure 1. Selection Flow Diagram

Types of Outcomes. This review included studies that measured at least one of the burden of care domains: physical, psychological, and financial.

Methods of Review and Data Extraction. The comprehensive search was conducted by the second author (KHT), the search results were managed using an EndNoteX9 Library (CK and KHT), and two reviewers (CK and KHT) independently assessed eligible articles. Any conflicts that arose during the selection process were resolved through discussion, and all selected articles were classified using an evidence hierarchy (NHMRC) and research designs. Relevant variables were extracted and managed in tabular form using the Microsoft Excel® spreadsheet software (KHT and CK), and methodological quality assessments were performed and reported in narrative and tabular forms (KHT). The burden of responsibility across three domains—physical, psychological, and financial—was extracted and managed in tabular form (CK), and the impacts of culture on the burden and experiences were extracted and managed in tabular form (CK, KHT).

Results

The comprehensive search yielded 322 relevant articles, 261 of which were duplicate articles and were removed and 157 of which were excluded following a title and abstract review, leaving 104 articles to be assessed for eligibility. A further 96 articles were excluded at the full-text selection stage, leaving only eight articles that met the eligibility criteria and that were included in this review (Figure 1).

Methodological Quality. In total, 810 participants from eight papers were included in this review (Table 1), where the average mean age was 46 years, ranging between 40 (Vahidi et al., 2016) and 54 (Makabe & Nomizu, 2006) years. All studies recruited caregivers who are a family member or relative of a woman patient with breast cancer. These research projects were conducted in six Asian countries, including China (Zhu et al., 2014), Iran (Khanjari et al., 2014; Vahidi et al., 2016), Japan (Makabe & Nomizu, 2006), Korea (Chung & Hwang, 2012), Malaysia (Jaafar et al., 2014; Mahadevan et al., 2013), and Thailand (Junda, 2004), four research designs were identified; two correlational studies, three cross-sectional studies, two descriptive studies, and one ethnographic study. The sample size ranged between 14 (Chung & Hwang, 2012) and 243 participants (Zhu et al., 2014), and data collection was performed using various tools: interviews (Chung & Hwang, 2012; Jaafar et al., 2014; Junda, 2004; Khanjari et al., 2014; Makabe & Nomizu, 2006), questionnaires (Jaafar et al., 2014; Mahadevan et al., 2013; Makabe & Nomizu, 2006; Vahidi et al., 2016; Zhu et al., 2014), and medical record reviews (Jaafar et al., 2014). Data analyses were performed appropriately; quantitative data were analyzed using suitable statistical tests and qualitative data were analyzed using thematic analysis. The two qualitative studies (Chung & Hwang, 2012; Junda, 2004) achieved methodological rigor in relation to an appropriate design with a relevant conceptual framework, appropriate methods, and relevant reporting. The key message concerning the burden of care among family caregivers vary among the eight studies (Table 1).

Burden of Responsibility. All studies reported ‘overloaded or lack of information of the disease and caregiving’ as a common physical burden, and negative impacts on caregivers’ daily routines and physical health were identified by most of the reviewed studies. The psychological burden was reported in the form of emotional and social concerns, such as anxiety, feeling uncertain about the future, and acceptance of the patient’s condition. Most of the reviewed studies revealed negative experiences, such as financial strain and an uncertain future direction, as well as ongoing healthcare and living costs. A summary of findings from the eight papers in three domains of the burden of care of family caregivers is presented in Table 2.

Table 1. Summary of Included Studies

Authors	Country	Study Design/Size	Data Collection	Caregiver Age (years ± SD)	Key Focus
Chung & Hwang (2012)	Korea	Descriptive Study N = 14	Interview	51	The couples experienced substantial distress and some unresolved hardships that required mutual effort toward resolving.
Jaafar et al. (2014)	Malaysia	Cross-sectional study N = 130	Medical record review; Self-report; Interview	43 ± 14.5	Caregivers' mean age was 10 years younger than that of the patients. The rates of major depressive disorder and dysthymia among caregivers were significantly associated with patients' functional status and caregivers' education level.
Junda (2004)	Thailand	Ethnographic study N = 17	Observation; Interview	44	Multiple methods were used to manage breast cancer, including family support, sociocultural, and Buddhist beliefs. Limited knowledge and ineffective communication between families and health professional were reported.
Khanjari et al. (2014)	Iran	Descriptive prospective study N = 88	Interview	41 ± 13.9	Psychological impact was the major factor influencing quality of life, particularly family health and relationships. Positive aspects of life were also reported.
Mahadevan et al. (2013)	Malaysia	Cross-sectional Study N = 130	Questionnaires	43 ± 14.5	Duration of caregiving and the shared burden of caregiving were associated with stress among caregivers. There were three significant factors predicting caregivers' stress: age of patient, patient's functional status, and sharing of caregiving burden.
Makabe & Nomizu (2006)	Japan	Correlational study N = 38	Questionnaires Interview	54 ± 9.3	There was a positive correlation between the psychological state of caregivers and the physical state of patients. By contrast, social supports were found negatively correlated with the psychological states among patients and their spouses prior to surgery.
Vahidi et al. (2016)	Iran	Correlational study N = 150	Questionnaire	40 ± 13.8	Factors associated with caregiver burden included daily living, level of education, gender, and financial status.
Zhu et al. (2014)	China	Cross-sectional study N = 243	Questionnaires	50 ± 9.4	Sacrifice, loss of control, embarrassment/anger, and dependency were found correlated with caregivers' quality of life. The total caregiver burden and mental health had the strongest correlation.

Impact of Culture on Burden and Experience. The findings of the reviewed studies reveal that caring for elderly patients with breast cancer in Asian cultures is performed on passionate grounds, involving family bonds, societal obligations, social support, and interpersonal relationships. Further, the impacts of culture on the care burden and experience among family caregivers in an Asian context vary across countries in terms of traditional practices, beliefs and attitudes, social norms, family bonds and structure, religion, and the relationship between health professionals and family caregivers. A summary of positive and negative impacts of culture on the care burden and experience is presented in Table 3.

Discussion

This integrative review summarized evidence derived from both quantitative and qualitative studies conducted in Asian countries. The family caregiver role in the Asian context, as reported in the reviewed articles, is given to a blood-related family member (e.g., father, mother, sister, bother, son, daughter, nephew, or niece) or an individual with a legal relationship to the patient (e.g., husband, wife, daughter-in-law, son-in-law, or mother-in-law) who lives in the same house as the loved one with cancer and who will provide unpaid care to the cancer patient.

All reviewed studies reported a care burden at least in one of the three domains: physical, psychological, and financial, which impact quality of life in the short and long terms. This message is consistent with the existing research evidence

Table 2. Three Domains of the Care Burden of Family Caregivers

Domain	Care Burden	Evidence
Physical burden	Ongoing and long-hour caregiving duties and fatigue;	Chung & Hwang, 2012; Jaafar et al., 2014; Junda, 2004; Mahadevan et al., 2013; Vahidi et al., 2016; Zhu et al., 2014
	Impacts on caregiver's daily routine and work schedule;	Chung & Hwang, 2012; Junda, 2004; Mahadevan et al., 2013; Vahidi et al., 2016; Zhu et al., 2014
	Impacts on caregivers' physical health	Junda, 2004; Khanjari et al., 2014; Zhu et al., 2014
	Overloaded or a lack of information of the disease and caregiving responsibilities	Chung & Hwang, 2012; Jaafar et al., 2014; Junda, 2004; Khanjari et al., 2014; Mahadevan et al., 2013; Makabe & Nomizu, 2006; Vahidi et al., 2016; Zhu et al., 2014
Psychological burden	Acceptance of patient's condition	Chung & Hwang, 2012; Junda, 2004; Khanjari et al., 2014
	Stress, anxiety and depression, emotional pressure, or emotional control (e.g., anger, embarrassment, conflict)	Chung & Hwang, 2012; Jaafar et al., 2014; Junda, 2004; Khanjari et al., 2014; Mahadevan et al., 2013; Makabe & Nomizu, 2006; Vahidi et al., 2016; Zhu et al., 2014
	Tiredness, sleeplessness, and loss of concentration	Chung & Hwang, 2012; Jaafar et al., 2014; Khanjari et al., 2014; Mahadevan et al., 2013; Vahidi et al., 2016; Zhu et al., 2014
	Feeling uncertain about the disease status, treatment outcomes, and future	Chung & Hwang, 2012; Jaafar et al., 2014; Khanjari et al., 2014; Mahadevan et al., 2013; Makabe & Nomizu, 2006; Vahidi et al., 2016; Zhu et al., 2014
Financial burden	Ongoing direct and indirect healthcare costs, such as medications, traditional and modern treatment, specific diets, special equipment, and health insurance.	Jaafar et al., 2014; Junda, 2004; Khanjari et al., 2014; Mahadevan et al., 2013; Vahidi et al., 2016
	Financial strain beyond healthcare costs, such as making merit, travel, and living costs.	Junda, 2004; Khanjari et al., 2014; Vahidi et al., 2016; Zhu et al., 2014
	Uncertainty of future in relation to financial-related concerns, such as poor economic situation, losing job.	Jaafar et al., 2014; Khanjari et al., 2014; Mahadevan et al., 2013; Vahidi et al., 2016; Zhu et al., 2014

Table 3. Impacts of Culture on Care Burden and Experience

Factor	Impacts of culture on care burden	Evidence
Positive impacts/Enablers to care	Societal obligations to look after family members create a great sense of responsibility among family caregivers in Asian cultures.	Chung & Hwang, 2012; Junda, 2004; Khanjari et al., 2014; Makabe & Nomizu, 2006; Vahidi et al., 2016; Zhu et al., 2014
	Family bonds and interpersonal relationships within Asian families help solve family members' conflicts during the care period.	Chung & Hwang, 2012; Junda, 2004; Khanjari et al., 2014; Makabe & Nomizu, 2006; Vahidi et al., 2016
	Social support through spirituality, rituals, and religion provides caregivers strategies to cope with the psychological burden.	Jaafar et al., 2014; Junda, 2004; Mahadevan et al., 2013
Negative impacts/Barriers to care	The social norm of hiding health conditions and hesitating to seek care may worsen the burden of care, because caregivers will not be fully informed.	Chung & Hwang, 2012; Makabe & Nomizu, 2006; Zhu et al., 2014
	The traditional belief that males should not express emotions or take on care roles places greater pressure on male caregivers	Chung & Hwang, 2012; Makabe & Nomizu, 2006
	Social hierarchies lead to imbalances in relationships between health professionals and family caregivers, creating one-way communication between doctors and families/patients, which results in a lack of understanding between the two parties.	Junda, 2004
	Sources of conflict, such as a lack of support, an inappropriate form of support, and support at inappropriate times, will increase the psychological burden on patients and family caregivers.	Chung & Hwang, 2012; Jaafar et al., 2014; Junda, 2004; Mahadevan et al., 2013; Makabe & Nomizu, 2006; Vahidi et al., 2016

in the Asian and global contexts (Meecharoen et al., 2013; National Cancer Institute, 2021; Rajasekaran et al., 2016; Schwartz et al., 2021). The psychological burden has both positive and negative aspects; for example, it is beneficial in that its impact enables patients and their caregivers to adapt to their physical difficulties (Chung & Hwang, 2012; Jaafar et al., 2014; Junda, 2004; Mahadevan et al., 2013; Vahidi et al., 2016; Zhu et al., 2014). On the other hand, the disadvantages of the psychological burden on daily life and health, such as tiredness, fatigue, and disrupted rest and quality of life, can lead to negative emotions and thoughts, including anxiety, stress, depression, sadness, and fear of loss. The man is the leader of the family in Asian cultures, and he must hide his emotions when caring for a partner with cancer, as it is the social norm in Asian communities for men to show leadership and strength. Conversely, female caregivers may empathize, understand, and express themselves through touch and encouragement.

Most caregivers in the Asian culture employ religious principles to heal their minds and cope with the psychological burden (Chung & Hwang, 2012; Junda, 2004; Khanjari et al., 2014). Meanwhile, the financial burden causes only a negative impact on families due to direct and indirect healthcare and living costs. Asian family caregivers inevitably face an overload hour in working to gain extra income to meet everyone's needs (Junda, 2004; Khanjari et al., 2014; Vahidi et al., 2016; Zhu et al., 2014). As such, the limited funding available to support family caregivers in Asian countries must be considered to relieve these burdens.

The findings of this review provide a big picture of the cultural factors influencing the burden of care and both negative and positive experiences among Asian family caregivers. It offers essential information to health professionals for understanding family caregivers and for integrating evidence-based practices into the Asian context. In addition, the summary can assist health providers in advocating for and managing appropriate supports that meet family caregivers' needs and enhance their role performance. Differences in cultures could be considered when adapting models of care from one community to another; in other words, a successful model of care and practices in a particular context does not guarantee implementation success in another context with a different culture. To ensure the quality of practices and to support family caregivers in Asian cultures, future research focusing on the in-depth details of cultural and social contexts is warranted.

Limitations. This integrative review included studies from six Asian countries, though the findings may not represent all Asian countries. In addition, the differences in culture within individual countries has not been addressed. However, reports derived from the eight reviewed studies were consistent and in line with the previous evidence. Another limitation of this review is by only including articles that published in English. Nonetheless, more than 80% of all the studies related to the topic have been published in English and were available worldwide.

Conclusion

In Asian cultures, caregiving role in families is perceived as an integral part of family responsibilities and relationship. Regardless, family caregivers in the Asian context still experience the burden of care the same as those in other contexts in terms physical, psychological, and financial factors. The differences in data collection methods, types of family caregivers (e.g., blood-related or legal relative), and patient stage could lead to different perspectives of the burden of care.

The understanding of family caregivers' experiences and their burden would enable the development of appropriate strategies to advocate for and support family caregivers. Therefore, further research to gain deeper insights into the burden of care among family caregivers is warranted, and the welfare system and health policy concerning support for caregivers are also advised to provide sufficient aid to family caregivers who are assisting patients with breast cancer in Asian countries.

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Influence of Self-Motivation and Health Locus of Control on Adherence to Medication Among Hypertension Patients

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Abstract

Hypertension is one of the more common comorbidities among patients infected with the Sars-CoV-2 virus, which causes COVID-19, but many hypertensive patients do not comply with taking medication. This study analyzed the relationship of self-motivation and health locus of control with self-management (medication adherence) among hypertensive patients during the COVID-19 pandemic at Private Hospital Surabaya, Indonesia. The research adopted a correlative analytic design with a cross-sectional approach, and the study's population comprised 74 hypertensive patients recruited by simple random sampling who were treated at Private Hospital Surabaya, Indonesia The instruments used included the Treatment Self-Regulation Questionnaire to measure self-motivation, the Multidimensional Health Locus of Control Scale to measure locus of control, and the Morisky Medication Adherence Scale–8 to measure self-management (medication adherence). Spearman's rank correlation coefficient was employed for data analysis to measure the relationships between self-motivation, locus of control, and with self-management (adherence to taking medication). The results reveal a relationship between self-motivation and adherence to medication at a level of p = 0.000 and a relationship between health locus of control and adherence to taking medication at a level of p = 0.000 among hypertensive patients during the COVID-19 pandemic at Private Hospital Surabaya, Indonesia. The findings suggest the value of efforts to provide motivation to patients and support their being more responsible in controlling their health conditions by adherence to medication.

Keywords: adherence to medication, locus of control, hypertension patients, self-motivation

Abstrak

Pengaruh Motivasi Diri dan* Locus of Control *pada Kepatuhan Minum Obat Pasien dengan Hipertensi. *Hipertensi merupakan salah satu penyakit dengan komorbiditas tertinggi pada pasien yang terinfeksi virus* Sars-CoV-2 *penyebab* COVID-19*, diperparah dengan masih banyaknya pasien hipertensi yang tidak patuh minum obat. Penelitian ini bertujuan untuk menganalisis hubungan motivasi diri dan* health locus of control *dengan* self-management *(kepatuhan minum obat) pada pasien hipertensi pada era pandemi* COVID-19 *di rumah sakit swasta* Surabaya*. Desain penelitian ini adalah analitik korelatif dengan pendekatan* cross-sectional*. Populasi penelitian ini adalah pasien hipertensi yang dirawat di rumah sakit swasta Surabaya Indonesia dengan* simple random sampling *sebanyak 74 orang. Instrumen yang digunakan dalam penelitian ini adalah* the Treatment Self-Regulation Questionnaire *untuk mengukur motivasi diri,* Multidimensional Health Locus of Control Scale *untuk mengukur* locus of control*, dan* Morisky, Medication Adherence Scale *untuk mengukur* self-management *(kepatuhan pengobatan). Analisis data yang digunakan untuk mengukur* self-motivation, locus of control *dengan* self-management *(kepatuhan minum obat) adalah tes* Rank Spearman*. Hasil penelitian menunjukkan bahwa ada hubungan antara motivasi diri dengan kepatuhan minum obat pada pasien hipertensi di era pandemi* COVID-19 *di rumah sakit swasta* Surabaya *dengan taraf (p = 0,000), dan ada hubungan antara lokus kesehatan dengan pengendalian dan kepatuhan minum obat bagi pasien hipertensi di era pandemi* COVID-19 *di rumah sakit swasta Surabaya (p = 0,000). Hasil penelitian menunjukkan bahwa upaya dengan memberikan motivasi dan dukungan untuk lebih bertanggung jawab dalam mengontrol kondisi kesehatannya (patuh minum obat).*

Kata Kunci: *kepatuhan minum obat,* locus of control*, pasien hipertensi,* self-motivation

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Introduction

Patients with hypertension, better known as high blood pressure, must routinely take medication to stabilize their blood pressure, but many people with hypertension do not comply with their medication regimen. Hypertension is one of the more common comorbid diseases or comorbidities, and, like everyone, hypertensive patients are susceptible to being infected with the Sars-CoV-2 virus, the cause of COVID-19. The latest data shows that the comorbid disease of COVID-19 is hypertension, namely 56.6% occurs in the United States, China (58.3%), Italy (49%), and Indonesia (50.5%). Hypertension is a comorbid disease often found in COVID-19 patients. Approximately 15% of cases of hypertension are found in this population. Hypertension is a comorbidity often found in COVID-19 patients, with about 15% of hypertension in Iraqi population (Salih et al., 2020). In 406 patients over the age of 60 years who died of COVID-19 infection, the overall proportion of hypertension was 39.7% (Kreutz et al., 2020). According to the World Health Organization (2013), the global prevalence of hypertension is 22% of the population, and less than a fifth of patients control their blood pressure. Africa has the highest rate of hypertension at 27%, followed by the Eastern Mediterranean with 26%, and Southeast Asia has the third-highest prevalence at 25% (Turk-Adawi et al., 2018).

A preliminary study of medical records by researchers at Private Hospital Surabaya, Indonesia from January through May 2021 found that 455 hypertensive patients visited during that time, with an average of 91 patients per month. According to health workers' information, many hypertensive patients do not follow treatment according to the treatment schedule, so their blood pressure increases due to not adhering to a medication regimen. Interviews with 20 patients suffering from COVID-19 revealed that 50% had a history of hypertension, 30% had a history of diabetes mellitus and 20% had no comorbid diseases. Of the 10 (50%) hypertension sufferers who were exposed to COVID-19, 5 patients were obedient to taking hypertension medication, and 5 patients did not adhere to taking the medication, because they were late for control to the hospital so they did not take medication the reason was that patients were afraid to go to the hospital during the COVID-19 pandemic.

The impact of not adhering to medication is that patients' blood pressure becomes uncontrolled, worsening their quality of life and, in the worst scenario, causing death due to complications. Hairunisa and Amalia's research (2020) found that hypertension has a relationship with Covid-19. Hypertension can exacerbate Covid-19 infection The virus will bind to angiotensin-converting enzyme 2 (ACE2) in the lungs and then penetrate cells; Antihypertensive drugs work inside cells, namely by converting angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs) in controlling hypertension (Kreutz et al., 2020).

Motivation is a crucial factor in enabling someone to take action to achieve a desired goal (Muslim and Rahayu, 2021). Therefore, to minimize nonadherence to hypertension medication, it is necessary to be motivated to change the habit of noncompliance with the medication regimen. In addition to motivational factors, adherence to taking hypertension medication is influenced by the health locus of control (HLOC) (Listiana et al., 2020), which is an individual's set of formative beliefs about what is good and bad for health. The HLOC comprises two components, namely internal HLOC (IHLC) and external HLOC (EHLC) (Mohebi et al., 2018). The present research analyzed the correlation of self-motivation and HLOC with self-management (medication adherence) among hypertensive patients during the COVID-19 pandemic at Private Hospital Surabaya.

Methods

This research adopted a correlative analytic design with a cross-sectional approach. The population was hypertension patients at Private Hospital Surabaya, and simple random sampling was employed to recruit patients who met the following inclusion criteria: patients who have 35 – 60 years old, patient with a diagnosis of hypertension for at least one year, the patient was conscious, able to communicate well, and agreed to participate in this study. The sample comprised 74 respondents, and the research was conducted from April through May 2022. The Treatment Self-Regulation Questionnaire was used to measure self-motivation (Looti, 2023). This questionnaire assesses the degree to which a person's motivation for a health behavior is relatively autonomous, so the wording varies slightly depending on which behaviors are being investigated. The Multidimensional Health Locus of Control Scale) measured locus of control (Wallston & Wallston, 2020), and the Morisky Medication Adherence Scale–8 measured adherence to medication). The researchers tested the validity and reliability of the questionnaires used in this study on 15 respondents. In testing the TSRQ, statement 13 was found to be invalid, but, after it was discarded, the questionnaire proved valid and reliable, with an alpha of .918 and an R^2 of 0.481. The MHLC also proved reliable and valid, with an alpha of .967 and an R^2 of 0.413, and the MMAS-8 proved valid and reliable with an alpha of .83 and an R^2 of 0.344. The data were collected using Google Forms.

This study's independent variables were self-motivation, locus of control, and, and the dependent variable was adherence to medication. The data analysis used the Spearman's rank test to measure the association of self-motivation and locus of control with adherence to medication.

The research was deemed ethically acceptable by the Health Research Ethics Committee of Lembaga Chakra Brahmanda Lentera (CANDLE) (Certificate no. 009/020/IV/EC/KEP/Lemb.Candle/2022). The participants provided informed consent before the data collection, and their names were anonymized for the study.

Results

This study found that the majority of hypertensive patients at Private Hospital Surabaya during

Table 1. Respondents' Characteristics by Gender, Age, Length with Hypertension, Self-Motivation, Locus of Control, and Adherence to Medication

Characteristics	N	%
Gender		
Male	35	47.3
Female	39	52.7
Age		
35–48	20	27
49–60	54	73
Length with hypertension		
5–10	30	40
>10	44	60
Self-motivation		
Strong	61	82.4
Middle	5	6.8
Weak	8	10.8
Locus of control		
High	56	75.7
Middle	7	9.5
Low	11	14.9
Adherence to medication		
High	57	77
Middle	12	16.2
Low	5	6.8

Table 2. The Correlation of Self-Motivation and HLOC in Relation to Adherence to Medication Among Hypertensive Patients (N = 74)

Variables	Adherence to Medication						Total		p	R
	High		Middle		Low		∑	%		
	n	%	n	%	n	%				
Self-motivation										
Strong	53	87	7	12	1	1	61	100	.000	0.353
Middle	3	60	2	40	0	0	5	100		
Weak	1	12.5	3	37.5	4	50	8	100		
Locus of control										
High	51	91	5	19	0	0	56	100	.000	0.840
Middle	4	57	3	43	0	0	7	100		
Low	2	18	4	36	5	46	11	100		

Note: Spearmen's rank analysis

COVID-19 had a hypertension diagnosis for more than 10 years. Based on Table 1, 52.7% were female, and 82.4% had self-motivation in the *strong* category. A majority had an HLOC in the *high* category (75.7%), and a majority showed a *high* level for the variable of adherence to medication (77.0%). The results of the Spearman's rank correlation test show that the correlation between self-motivation and medication adherence was p = .000 (R = 0.353), and the correlation of locus of control and medication adherence was p = .000 (R = 0.840) (see Table 2).

Discussion

This study found that the majority of hypertension sufferers (52.7%) in the COVID-19 era at Private Hospital Surabaya were female. Most of the women in this study were already menopausal, a condition that makes women more susceptible to hypertension, as it is related to increased blood pressure. Menopause decreases the hormone estrogen, which protects blood vessels from damage (Rosdiana & Cahyati, 2019), and the American College of Cardiology states that the decline of estrogen levels at menopause is the main trigger of hypertension in women (Zhao et al., 2018). Meanwhile one of the factors that can cause hypertension in men is smoking. The nicotine in cigarettes affects blood pressure either through the formation of athero-sclerotic plaques, a direct effect of nicotine's inhibiting the hormones epinephrine and nor-epinephrine, or through the effect of CO in increasing red blood cells.

Most respondents in this study were aged 49 – 60 years (73%). Age influences hypertension through problems associated with a decline in bodily functions, such as thickening of the heart valves and decreased elasticity of the blood vessels, which increases systolic and diastolic blood pressure (Fadlilah et al., 2020). Older people are more likely to comply in medication treatment, however Rikmasari et al. (2020) found that old age is a factor that supports adherence to taking antihypertensive medication. In his study, it showed that the odds ratio was 5.43, meaning that older patients (> 65 years) were 5.43 times more adherence to take medication. Older people are more obedient in taking medication because they fear disease symptoms and death (Rikmasari et al., 2020).

A majority of our respondents had hypertension for more than 10 years, so they had experienced feeling the discomfort of symptoms and knew how to solve them, but in this private Hospital Surabaya provides health education to patients every two weeks, so they frequently hear about the symptoms and complications of the disease. It was expected to increase their motivation to get healthy. But in the other hand in this study, there was respondent who have low adherence of medication. The reasons were because they have felt healthy, preferring to take traditional medicines or other therapies if they have complaints, forgetting to take their medication being unable to afford medicine, and fear of medication's side effects. According to Listiana et al. (2020), the duration of hypertension is related to patients' anxiety levels.

Our results show that the majority of hypertension sufferers in the COVID-19 era at Private Hospital Surabaya had motivation in the high category (82.4%), indicating a strong internal and external drive to comply with taking hypertension medication. Motivation is defined as encouragement from within and outside an individual to comply with taking hypertension medication (Nakata et al., 2019). It has three main elements: needs, drives, and goals (Phillips & Guarnaccia, 2020). Needs occur when individuals experience an imbalance between what they have and what they expect Drive is a matter of mental strength that is oriented toward fulfilling expectations or achieving goals (Lens & Vansteenkiste, 2020).

Goal-oriented drive is fundamental to motivation (Green et al., 2020), which is a predictor of adherence to therapeutic regimens and blood pressure control. Human motivation believe in the cognitive and go through the process thinking based on knowledge possessed by individuals, who will be motivated to pursue an action if it meets their purpose, plans, and expected results. Some research indicates that those with high motivation show positive results in hypertension management, such as improved participation in a physical exercise program and low reported depressive symptoms (Cartagena et al., 2021).

One factor that influences motivation is the desire to recover, as adherence to taking medication greatly affects the number of hypertension symptoms that reappear (Leventhal et al., 2020). Motivation comes from individuals to encourage behavior to fulfil needs and get satisfaction (Taylor, 2021). Intrinsic factors of motivation are personality, attitude, experience, education, and hopes for the future (Duan et al., 2020). Higher education strengthens self-motivation for taking medication regularly and enhances positive behavior. The theory of motivation defines it as a drive to achieve certain goals that manifests in the form of behavior, while the behavior itself arises from process involving human interaction with the environment.

This research found a relationship between motivation and adherence of medication, because patients wishing who have a strong desire to recover will take medication regularly. This contradicts Tania et al.'s (2019) finding that motivation does not influence the adherence of medication, because patients get tired of taking antihypertensive medication every day and they feel that taking medication everyday did not show the better condition. Hypertension sufferers may also believe that drugs cannot cure or eliminate hypertension, so motivation and self-efficacy can be increased by improving patients' knowledge through structured health education. Another way to improve adherence to medication is for family supporting to patients in managing and modifying their lifestyles. Family support has a big role in improving self-motivation and adherence to medication and preventing depressive symptoms. This is supported by research by Yeni et al. (2016), who found that family support was correlated with compliance in hypertensive patients (KD = R^2 = 61.8). It means that that family support affects compliance in hypertensive patients (61.8%) and 38.2% is influenced by other factor (Yeni et al., 2016).

This study found that the majority of hypertension sufferers in the COVID-19 era at Private Hospital Surabaya had an HLOC in the high category (75.7%). It showed that high locus of control can do the high adherence of medication. Frank et al. (2019) state that part of the drive to behave in a given way is determined by the environment and part by the individual. HLOC is a source of control that plays a role in supporting beliefs. HLOC is a source of control that plays a role in supporting beliefs (Afsahi &

Kachooei, 2020). Patients with hypertension who have an IHLC will have confidence that they have control over their own health and consequently will take responsibility for their health by complying with recommendations for stable blood pressure. Hypertensive patients at Private Hospital Surabaya during the pandemic perceived that their individual health was under their control. Humans have a locus of control or center as a person's belief to control the events. This study found that a majority of the respondents had a high level of adherence (77.0%). Compliance in taking hypertension medication in this case represents a person's level in carrying out a recommended rule or behavior (Zahroh et al., 2023). Medication adherence comprises following the right dose, method of drug administration, time of drug administration, and period of taking medication (Jain, 2020). We found that the majority of hypertension sufferers in our sample were very obedient in following the recommended rules and behaviors as described. The adherence of medication was one of the self-management for hypertension (Sadang et al., 2021).

While most of our respondents adhered to taking medication, 6.8% had low adherence. Possible causes of nonadherence in taking medication include incomplete information, information from health workers not being understood by the respondents, shame or fear about asking for repeated explanations (because the health workers explanation was not understood), and feeling fatigued in the process of treatment because taking medication requires regularity over a long period of time. Men are at greater risk of nonadherence to treatment than women because women are more patience than men in undergoing treatment.

The results of the Spearman's rank correlation test reveal a significant positive relationship between motivation and adherence to medication in patients with hypertension, with the correlation strength (R) value of 0.353. The positive sign obtained indicates correlation in the same direction, namely, the higher the motivation, the higher the adherence to taking medication. High motivation springs from a patient's need to achieve a goal, namely, to recover from illness, and from the patient's desire to undergo regular treatment. The relationship between patients' motivation and adherence to taking hypertension medication reveals differences in medication adherence in patients with high, medium, and low motivation. Patients with high motivation show high adherence to taking medication, and those with low motivation have a low level of adherence. Adherence to the treatment program is strongly influenced by self-motivation and self-awareness in complying with the treatment guidelines, as self-motivation to maintain health is very influential in patients' behavior in controlling their disease (Poulter et al., 2020). According to researchers, a person with strong motivation has positive expectations, high expectations, and high confidence in carrying out activities related to the problems faced, in this case the problem of treating hypertension. Individual motivation to maintain health strongly influences the behavior of patients in controlling their disease (West et al., 2018).

Individuals with a high health locus of control work hard to take action to heal, always seek solutions to problems, always think as effectively as possible, and perceive that recovery requires hard work (Charles, 2020). HLOC has two aspects, namely IHLC and EHLC. Individuals with a high HLOC desire to get better and make decisions to improve their health status (Boyd & Wilcox, 2020). Those with IHLC believe they have control over their health conditions, so they tend to be more responsible for health and comply with recommendations to increase the effectiveness of treatment. Those with EHLC believe that external factors influence their personal health; they do not feel involved or take full responsibility for the treatment process.

Individuals with a high locus of control believe that they can control their health conditions and tend to learn from previous experiences. Individual with a high HLOC will seek and analyze alternatives that can support their health status. HLOC is very important, because it can make a sense of responsibility for controlling the healthy and self-care. According to Suryani et al. (2021), males typically have a stronger IHLC than females, who tend to have an EHLC, as they have less perception of their health and are more prone to depression in comparison men (Ainiyah & Wijayanti, 2019). Women are sometimes busy taking care of the household, and a lack of motivation can affect women in maintaining control over their own health. An IHLC can prevent recurrence because attitude will prevent signs of hypertension from occurring (Ainiyah & Wijayanti, 2019).

Families can support adherence to taking medication regularly. Those with hypertension need family support to follow treatment that requires the long-term consumption of internal medicine. From a socioeconomic standpoint, the family can provide adequate information, a sense of security, and comfort in recovery so that sufferers can feel protected and focus on treatment. Family support also provides encouragement for patients to recover by undergoing therapy as recommended by a health professional. The patient has to live with the condition in the long term, but families supporting can make the treatment will be monitored (Wulandari & Puspita, 2019).

The results imply that hypertensive patients can better adhere to medication by increasing self-motivation and locus of control. The locus of control can be strengthened by controlling blood pressure regularly, knowing one’s blood pressure, not using over-the-counter drugs, knowing the side effects of the drugs one is taking, and taking medication regularly and according to a doctor’s advice. A limitation in this study was the limited number of samples taken because the data collection was conducted during an ongoing pandemic.

Conclusion

The study confirmed a correlation of self-motivation and locus of control with medication adherence. Self-motivation can be strengthened by upgrading patient knowledge through structured health education and through social support, especially from the family. The locus of control can be improved by controlling blood pressure regularly, being aware of blood pressure, not using over-the-counter drugs, knowing about hypertension drugs, and using medication reminder alarms on a smartphone. The results of this study are expected to be a consideration for health services to provide counseling to hypertensive patients to remain compliant with treatment programs, provide important information to comply with the treatment process and can improve motivation in the treatment process.

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Non-Pharmacological Management of Nausea and Vomiting in Cancer: A Scoping Review

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Abstract

Prevention and management of nausea and vomiting are important in cancer treatment. Effective management requires both pharmacological and non-pharmacological interventions. Patients and family members have important contributions to achieve effective control of nausea and vomiting through self-management. The objective of this review is to explore and synthesize the scientific literature about self-management strategies as a type of non-pharmacological intervention for managing nausea and vomiting in cancer patients. The articles were searched in PubMed, Science Direct and ClinicalKey databases using keyword combinations of "cancer", “non-pharmacological”, "intervention", "management", "nausea" and "vomiting". The inclusion criteria were articles that were free; full text; published in the last five years; provided information about non-pharmacological strategies in managing nausea and vomiting in cancer; and were written in English. Out of a total of 232 papers identified, 21 were selected. The results show that non-pharmacological management of nausea and vomiting ranged from simple self-management techniques to integrative therapies and palliative interventions. Self-management emphasizes patient autonomy in their own care and encourages patients and families to assume the responsibility of managing relevant aspects of their condition. The strategies include dietary modifications, environmental modifications, psychological strategies, exercise and taking of medication as prescribed. The interventions discussed in this article can be applied by patients as directed or instructed by healthcare teams. Nurses play an important role in educating patients on non-pharmacological interventions and encouraging them to achieve self-efficacy. Further research of other such interventions with larger sample sizes is needed to provide more accurate results.

Keywords: cancer, intervention, nausea, non-pharmacological, management, vomiting

Abstrak

Manajemen Nonfarmakologis Mual dan Muntah pada Kanker: **Scoping Review.** *Pencegahan dan pengelolaan mual dan muntah penting dalam pengobatan kanker, yang efektif dengan intervensi farmakologis dan nonfarmakologis. Pasien dan anggota keluarga pun mempunyai kontribusi penting untuk mencapai pengendalian mual dan muntah yang efektif melalui manajemen diri pasien. Tujuan dari tinjauan ini adalah untuk mengeksplorasi dan menyintesis literatur ilmiah tentang strategi manajemen diri sebagai jenis intervensi nonfarmakologis untuk mengelola mual dan muntah pada pasien kanker. Artikel-artikel tersebut dicari di basis data* PubMed, Science Direct, *dan* ClinicalKey *menggunakan kombinasi kata kunci "kanker", "non-farmakologis", "intervensi", "manajemen", "mual", dan "muntah" dengan kriteria inklusi seperti: artikel tidak berbayar; teks lengkap; diterbitkan dalam lima tahun terakhir; memberikan informasi tentang strategi non farmakologis dalam manajemen mual muntah pada pasien kanker; dan ditulis dalam Bahasa Inggris. Dari total 232 makalah yang diidentifikasi, 21 dipilih untuk penelitian ini. Hasil telaah menunjukkan bahwa manajemen nonfarmakologis mual dan muntah meliputi teknik manajemen diri yang sederhana hingga terapi integratif dan intervensi paliatif. Manajemen diri menekankan otonomi pasien dalam perawatan mandiri dengan mendorong pasien dan keluarga untuk bertanggung jawab mengelola aspek yang relevan dari kondisi mereka. Strategi tersebut meliputi modifikasi pola makan, modifikasi lingkungan, strategi psikologis, olahraga, dan minum obat sesuai resep. Intervensi yang dibahas dalam artikel ini dapat diterapkan oleh pasien seperti yang diarahkan atau diinstruksikan oleh tim kesehatan. Perawat memainkan peran penting dalam mendidik pasien tentang intervensi nonfarmakologis dan mendorong mereka untuk mencapai efikasi diri. Penelitian lebih lanjut dari intervensi serupa lainnya dengan ukuran sampel yang lebih besar diperlukan untuk memberikan hasil yang lebih akurat.*

Kata Kunci: *intervensi, kanker, manajemen, mual, muntah, nonfarmakologis*

Introduction

Cancer is a generic term for diseases that can attack any parts of the body and are characterized by fast abnormal cell division, cell growth beyond the limit, invasion of neighbouring body parts, or spread to other organs. The choice of cancer therapy includes chemotherapy, radiotherapy, and/or surgery that aims to treat cancer and improve the quality of life by supporting patients' physical, psychosocial and spiritual welfare and providing palliative care at the stage of terminal cancer (World Health Organization, 2022). Across the cancer trajectory, from the stage of screening and early detection up to that of survival or death, various responses are shown by patients, their families, and healthcare providers. These are displayed as signs, symptoms or side effects and toxicities that can have positive or negative impacts on patients (Yarbro et al., 2014). Patients' understanding of symptom management can optimize the palliation effect, relieve symptoms, and improve the quality of life (Shoemaker et al., 2011).

Nausea and vomiting are often experienced by cancer patients due to the nature of the disease and its associated therapy. Approaches to manage nausea and vomiting in cancer patients should begin with complete assessment, including the frequency, duration and intensity of nausea/vomiting; related activities; and whether anorexia or cachexia is present (Navari, 2020). Prevention and control of nausea and vomiting is important during cancer therapy. Chemotherapy-induced nausea and vomiting (CINV) are two of the most common and distressing symptoms for cancer patients treated in this way, with a prevalence of 80% and which have a significant impact on their quality of life. Poorly controlled nausea and vomiting may cause metabolic disturbances, malnutrition and anorexia, electrolyte imbalances, deterioration of mental state and functional ability, oesophageal tears, fractures, wound dehiscence, interruption to disease-related treatment, and degeneration of self-care and functional ability (PDQ Suppor-tive and Palliative Care Editorial Board, 2021; Ferrell & Paice, 2019).

Most research on nausea and vomiting focuses on the oncological population. Although there has been progress in anti-emetic therapy over the past three decades, nausea and vomiting are still to be one of the most feared and distressing symptoms for patients. Their management requires a combination of pharmacological and non-pharmacological approaches. Non-pharmacological management ranges from simple self-management techniques to integrative therapies and palliative interventions. Self-management emphasizes patient autonomy in their own care and encourages patients and families to assume the responsibility of managing rele-vant aspects of their condition (Ferrell & Paice, 2019). The objective of this review is to explore and synthesize the scientific literature about self-management strategies as one type of non-pharmacological intervention for managing nausea and vomiting in cancer patients.

Methods

The articles were searched in the PubMed, Science Direct, and ClinicalKey database using the following keywords in combination: "cancer", "non-pharmacological", "intervention", "management", "nausea" and "vomiting". The inclusion criteria for journal articles in this scoping review were that they were free; full text; published in the last five years (2017–2022); provided information about self-management strategies in managing nausea and vomiting in cancer; and were written in English. We did not specify the type of cancer or the type of cancer therapy which can trigger nausea and vomiting in order to expand the search results.

From the search results, 232 articles were identified. These were selected based on title, abstract and keywords. After manual screening by three authors of this manuscript, we removed one duplicate article and 175 that did not meet the inclusion criteria. 56 articles were selected for full text review. Seven of these were excluded because they were research protocols, five because they related to pharmacological interventions, and 23 as they related to non-pharmacological interventions other than self-management strategies and not related to nausea and vomiting. Twenty-one articles were considered suitable for inclusion in the final dataset. The procedure used to select the included papers is shown in Figure 1.

Results

A total of 21 research articles were reviewed in the scoping review (see Table 1). The research studied came from 10 countries, namely the Netherlands, Canada, Iran, Switzerland, Japan, Turkey, China, United States, Singapore, and Brazil. Seventeen articles involved adult cancer patient participants with advanced cancer or cancer survivors (n = 6); patients undergoing chemotherapy (n = 10); patients during autologous hematopoietic stem cell transplantation (AHSCT) (n = 1); and before or after cancer surgery (n = 2). The other two articles involved children and adolescents undergoing chemotherapy.

Three articles discussed environmental modifications, such as the use of peppermint oil and peppermint extract, or music therapy with periorbital massage (Dadkhah et al., 2019; Ertürk & Taşcı, 2021; Jafarimanesh et al., 2020). Seven articles reviewed psychological strategies using behavioural interventions, self-care education programs, integrated educational programs, dignity therapy, perceptual stress reduction, structured education, and serious game (Bayati et al., 2019; Cao et al., 2020; Hunter et al., 2020; Ince & Usta, 2020; Karimi et al., 2017; Loerzel et al., 2020; Zaki-Nejad et al., 2020). Other strategies, such as using exercise to improve nausea and vomiting, were discussed in four articles (Anestin et al., 2017; Chang et al., 2020; Nakano et al., 2018; van Waart et al., 2015). The other four articles reported on interventions related to abdominal massage, nutritional intervention, the combination of multiple non-pharmacological interventional components, and mixed intervention of nutrition and physical exercise (Cheng & Tan, 2021; de Souza et al., 2021; Nasab et al., 2021; Uster et al., 2018).

Discussion

Although there are various pharmacological interventions, nausea and vomiting remain the most distressing symptoms. Understanding non-pharmacological approaches to symptom management and integrating them into daily care can minimize the physiological effects of uncontrolled symptoms and their potential negative effects on the quality of life. Non-pharmacological interventions can be grouped into several strategies, such as self-management strategies, biological therapy, non-biological therapy, and acupuncture and acupressure. Self-management emphasizes patient autonomy in their own care and encourages patients and families to assume the responsibility of managing their condition. Some of the strategies are dietary modifications, environmental modifications, psychological strategies, and other strategies such as exercise and taking medications as prescribed (Ferrell & Paice, 2019).

Nutrition counselling can be used as an option for self-management strategies in the management of nausea and vomiting. In a randomized controlled trial study, Uster et al. (2018) provided three individual nutritional counselling sessions combined with a 60 minutes exercise program twice a week. The intervention was superior to usual care in terms of the patients' rating of symptom scales, nausea and vomiting and protein intake. Nutrition counselling conducted by de Souza et al. (2021) with breast cancer patients undergoing neoadjuvant chemotherapy produced relatively positive results. Participants received nutritional advice including guidelines on healthy eating and nutritional information to reduce CINV, together with individual diet plans from dietitians based on each subject's age, current weight and height. The intervention group had better quality of life, nausea and vomiting management, and better appetite than the control group. It can be concluded that nutritional intervention can reduce nausea and vomiting.

Mentha piperita is mostly used as a remedy for spasms, cramps, headaches, migraines, indigestion, nausea and flatulence. A trial conducted by Jafamarinesh et al. (2020) using 40 drops of peppermint extract mixed with 20 cc of tap water every 8 hours was shown to reduce the severity of nausea, vomiting and anorexia in breast cancer patients undergoing breast cancer chemotherapy 24 and 48 hours after treatment. The use of peppermint as a complementary method can improve symptoms of nausea, vomiting and anorexia, but further studies with larger sample sizes and longer follow-up periods are needed to confirm these findings (Jafarimanesh et al., 2020). Peppermint oil was also employed by Ertürk and Taşcı (2021) in a quasi-randomized study of chemotherapy patients in a Turkish general hospital. In their study, the oil was used as aromatherapy, given as one drop between the upper lip and nose (philtrum) three times a day for five days after chemotherapy as an adjunct to routine antiemetic therapy. Participants were asked to take deep breaths after using the aromatic mixture to receive a refreshing effect and pleasant aroma. The results of the study show that the visual analogue scale (VAS) score on nausea was lower in the intervention group and that there was a significant difference in changes

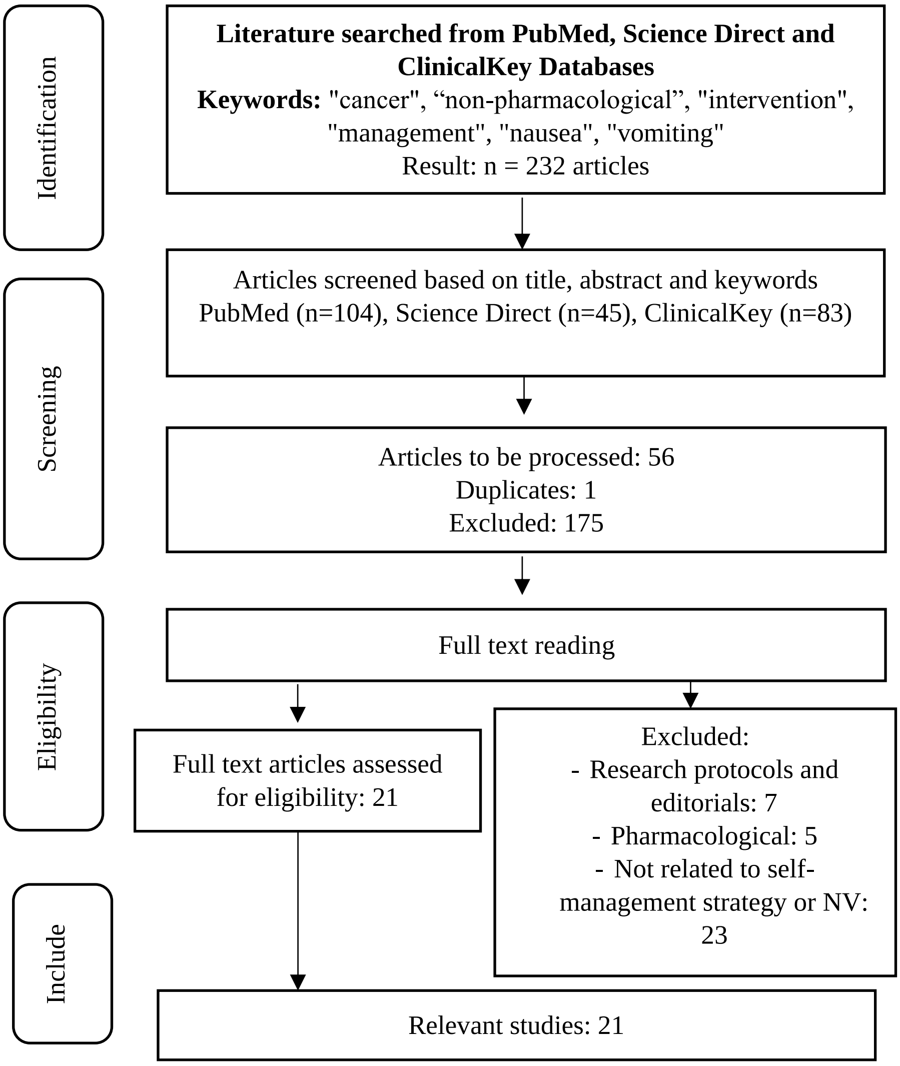

Figure 1. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyse

Table 1. Data Analysis

No.	Author, Year, Title	Methods	Intervention	Results
1	Van Waart et al. (2015) *Effect of low-intensity physical activity and moderate- to high-intensity physical exercise during adjuvant chemotherapy on physical fitness, fatigue, and chemotherapy completion rates: Results of the PACES randomized clinical trial*	RCT. Patients who were scheduled to undergo adjuvant chemotherapy (N = 230) were divided into Onco-Move (n = 77), OnTrack (n = 76), or UC (n = 77) groups. Performance-based and self-reported outcomes were assessed before random assignment at the end of chemotherapy, and at the 6-month follow-up. Onco-Move and OnTrack intervention started in the first cycle of chemotherapy and continued until 3 weeks after the last cycle.	Onco-Move is a home-based, low-intensity, individualized, self-managed physical activity program. Behavioral reinforcement techniques were added. Specially trained nurses motivated participants to engage in at least 30 minutes of physical activity per day, 5 days per week, with an intensity level of 12 to 14 on the Borg Scale of perceived exertion. OnTrack is a moderate- to high-intensity, combined resistance and aerobic exercise program, which was super-vised by specially-trained physical therapists. Participants attended two sessions per week. Six large muscle groups were trained for 20 minutes per session, with two series of eight repetitions at 80% of the one repetition maximum. UC varied according to hospital guidelines and preferences, but did not involve routine exercise.	Onco-Move and OnTrack resulted in less reduction in cardiorespiratory fitness ($p < 0.001$), better physical function ($p < .001$), less nausea and vomiting ($p < .029$ & $.031$) and less pain ($p < .003$ & $.011$) compared to UC. OnTrack also resulted in greater muscle strength ($p < .002$) and less physical fatigue ($p < .001$). At the 6-month follow-up, most of the outcomes had returned to baseline for all the groups.
2	Anestin et al. (2017) *The Effects of the Bali Yoga Program for Breast Cancer Patients on Chemotherapy-Induced Nausea and Vomiting: Results of a Partially Randomized and Blinded Controlled Trial*	A partially randomized and blind controlled trial. A total of 82 adult patients with stage I to III breast cancer who were receiving chemotherapy were assigned to the intervention group (n = 52) or the control group (n = 30).	The intervention group received an 8-week Balinese yoga program alongside standard care. The control group only received standard care for 8 weeks, followed by a Balinese yoga program for an additional 8 weeks. The yoga program consisted of 8 weekly group sessions of 90 minutes, with five participants per group, led by one instructor. Participants were also given DVDs in 20 40 minutes formats.	No significant difference between the experimental and control groups in terms of CINV was shown after 8 weeks. The results showed no benefit of the yoga program in managing NV. However, considering the preliminary evidence showing the beneficial impact of yoga in the management of cancer symptoms, methodological limitations should be explored and additional studies should be undertaken.
3	Karimi et al. (2017) *Surveying the effect of a self-care education program on severity of nausea and emesis in*	This semi-experimental research was conducted at Imam Reza Kermanshah Hospital, Iran. A total of 52 colorectal cancer patients who were undergoing chemotherapy were divided into control and intervention groups (n = @26). Data were collected using a	The intervention group received a self-care exercise package, including progressive muscle relaxation, music therapy and nutrition education over 12 sessions, including the use of educational tools such as pamphlets, brochures, pictures, and videos. The sessions were	There was a significant reduction in the intensity and frequency of nausea and vomiting after the intervention. The p-value of the Mann–Whitney U test for the intensity of nausea in the experimental and control groups af-

Table 1. Data Analysis

No.	Author, Year, Title	Methods	Intervention	Results
	colorectal cancer patients under chemotherapy	demographic questionnaire. Morrow Assessment of Nausea and Emesis.	conducted for two months with a duration of 45 – 60 minutes each.	ter the intervention indicated that the self-care program was effective.
4	Uster et al. (2018) *Effects of nutrition and physical exercise intervention in palliative cancer patients: A randomized controlled trial*	RCT. Patients were randomized into intervention (n = 20) and control (n = 20) groups. The intervention was conducted for 3 months. Using the EORTC Quality of Life Questionnaire version 3.0, physical performance, nutritional status, dietary intake, and clinical data were measured at baseline and after 3 and 6 months.	The intervention group received at least three individualized standardized nutrition counselling sessions and participated in a 60-minute exercise program twice a week. The control group received the usual care.	No difference in global health status/general quality of life was shown. The intervention was superior to usual care in terms of the symptom scale assessed by the patient, nausea and vomiting ($p = 0.023$) and protein intake ($p = 0.01$). No significant difference shown in energy intake, nutrition or physical performance.
5	Nakano et al. (2018) *Effects of Aerobic and Resistance Exercises on Physical Symptoms in Cancer Patients: A Meta-analysis*	Systematic review and meta-analysis. Ten studies exploring the effects of exercise on physical symptoms, including fatigue, nausea/vomiting, pain, dyspnea, insomnia, loss of appetite, constipation, and diarrhea in cancer patients and survivors were conducted qualitatively (meta-analysis). Cancer-related physical symptoms were measured by the EORTC QLQ-C30.	Resistance, aerobic, or mixed training.	The mean PEDro score was 5.43 (SD = 1.28). Fatigue, pain, dyspnea, and insomnia were significantly lower in the intervention group post-intervention in the cancer patients. The exercise intervention did not improve or suppress nausea/vomiting, loss of appetite, constipation or diarrhea in the patients.
6	Dadkhah et al. (2019) *Effect of Music Therapy with Periorbital Massage on Chemotherapy-Induced Nausea and Vomiting In Gastrointestinal Cancer: A Randomized Controlled Trail*	RCT. 60 gastrointestinal cancer patients with chemotherapy were randomized into intervention and control groups. The Rhodes questionnaire was used to assess nausea and vomiting before and 24 hours after chemotherapy.	The intervention group received two concurrent interventions in the form of music therapy and periorbital massage, while the control group received routine intervention. The music therapy involved calming music including classical (e.g. Beethoven) and traditional music that contained slow, consistent and melodic rhythms. Music was played for 45 minutes during chemotherapy via an MP3 player and headphones. An electronic eye massager was placed over the patients' eyeballs for 15 minutes during treatment.	Music therapy plus periorbital massage significantly reduced nausea ($p = .000$) and vomiting ($p = .004$) in patients in the intervention group undergoing chemotherapy compared to the control group.
7	Bayati et al. (2019) *Investigating the effect of integrated educational program on the*	Clinical trial study. 64 patients were admitted to a special cancer hospital affiliated with Ahvaz Jundishapur University of Medical Sciences, Iran, and selected according to inclusion criteria. Through the block	The intervention group received integrated training for four sessions of 60 minute duration (one session/week). The educational content was approved by dietitians, cancer specialists, cancer nurses and	All functional and symptomatic (fatigue, nausea vomiting, pain, shortness of breath, sleep disturbances, loss of appetite, constipation and diarrhea) dimensions of quality of

Table 1. Data Analysis

No.	Author, Year, Title	Methods	Intervention	Results
	quality of life among cancer patients: A clinical trial study	randomization method, they were divided into intervention and control groups (@ 32 patients). The data collected included demographic and quality of life (QLQ-C30) data. Quality of life was measured before and 2 months after training.	psychologists and covered spiritual and emotional care, diet and symptom management.	life in the intervention group significantly improved one and two months after following the integrated education program.
8	Hunter et al. (2020) *A randomized trial of nurse-administered behavioral interventions to manage anticipatory nausea and vomiting in chemotherapy*	Randomized, three-arm trial. Patients undergoing chemotherapy for solid tumors were randomized into mindfulness relaxation_(MR) (N = 160), relaxation music_(RM) (N = 159) and standard care_(SC) groups (N = 155). Anticipatory nausea and vomiting were assessed at the mid and end points of the chemotherapy series using the Morrow Assessment of Nausea and Emesis (MANE).	The MR group received guided mindfulness/awareness exercises, imagery, and relaxation practices for around 20 minutes, repeated during chemotherapy. The RM group received recordings identical to those of MR, but without specific relaxation/meditation instructtions; just relaxing music with sounds of nature or vocal tracks. In the SC group, patients received general information about the management of chemotherapy-related symptoms. The MR and RM groups also received this information.	Compared with the SC group, there was a decrease in mid-chemo anti-cipatory nausea in the MR (OR 0.44, 95% CI 0.20 – 0.93) and RM (OR 0.40, 95% CI 0.20 – 0.93) groups, after controlling for age, sex, cancer stage, and emetogenic level of chemotherapy. There was no difference between the treatment groups in anticipatory nausea and vomiting at the end of chemotherapy and the post-chemotherapy sessions.
9	Zaki-Nejad et al. (2020) *The effect of dignity therapy on the quality of life of patients with cancer receiving palliative care*	Quasi-experimental study. 50 patients with cancer admitted to a palliative care center in Tehran, Iran, during the period 2017 – 2018 who met the inclusion criteria were selected through convenience sampling (intervention and control group @ 25 patients). The EORTC-QLQ-C15-Pal instrument was used and completed by the patients before and 2 weeks after dignity therapy.	Dignity therapy was divided into three sessions. Session I was an introduction to the approach method (known as the 13-question protocol of dignity therapy); in session II (24-48 hours later), the researchers guided participants to talk about important aspects of their lives and whatever they wanted to record as memory based on certain questions in the protocol; while in session III (3 days later), the text prepared was read to the participants and corrected if necessary. The final version of the text was given to participants to share with their loved ones.	Dignity therapy improved the quality of life in the intervention group (t35.18 = 4.82, p = 0.001). There were significant differences between the two groups in terms of physical functional scale (t32.96 = 2.60, p = 0.01) and emotional functioning (t45.69 = 6.54, p < 0.001). Dignity therapy also improved nausea and vomiting (χ2 = 5.71, p = 0.02), insomnia (χ2 = 15.78, p < 0.001), appetite (χ2 = 5.09, p = 0.02), and constipation (χ2 = 12.50, p < 0.001).
10	Jafarimanesh et al. (2020) *The Effect of Peppermint (Mentha piperita) Extract on the Severity of*	RCT. The sample comprised 84 breast cancer patients undergoing chemotherapy who were divided into experimental and control groups (n = 42). The severity of nausea, vomiting, and anorexia was measur-	Patients in the experimental group received 40 drops of peppermint extract mixed with 20 cc of tap water every 8 hours, while patients in the control group received 40 drops of distilled water mixed	There was a significant difference between the two groups at 24 and 48 hours after chemotherapy (p < .05). The mean score for the severity of nausea, vomiting and anorexia in

Table 1. Data Analysis

No.	Author, Year, Title	Methods	Intervention	Results
	Nausea, Vomiting and Anorexia in Patients with Breast Cancer Undergoing Chemotherapy: A Randomized Controlled Trial	ed and recorded before, immediately after intervention, and 24 and 48 hours after chemotherapy using the Visual Analog Scale (VAS).	with 20 cc of tap water every 8 hours.	the experimental group was lower than for the control group (p < .05).
11	Cao et al. (2020) *Effect of perceptual stress reduction control intervention on the level of symptoms in breast cancer at different time points*	A total of 124 patients who met the inclusion criteria and were undergoing breast cancer surgery at Harbin Medical University Cancer Hospital, China from March 2018 – February 2019 participated in this study. 62 patients were included in the intervention and control groups. Symptom cluster rates at different times were compared between the two groups.	Both groups were given preoperative care and routine chemotherapy. The intervention group was given a perceptual stress reduction control intervention through diluion therapy and meditation before going to bed.	Perceptual stress reduction control interventions were shown to effectively relieve bone marrow suppression, digestive tract discomfort (nausea, vomiting, diarrhea), and breast discomfort symptoms, as well as to improve health promotion behaviors.
12	Ince and Usta (2020) *The Effect on Nausea and Vomiting of Structured Education Given to Male Lung Cancer Patients Receiving Chemotherapy*	A quasi-experimental study with pre-posttest control groups. 40 lung cancer survivors who met the inclusion criteria were followed in the chest disease clinic and outpatient chemotherapy unit at a university hospital in Turkey and were grouped into experimental and control groups (@n = 20). Nausea and vomiting were measured using VAS before chemotherapy (pre-test), 24 hours after chemotherapy (post-test 1), and 4 – 6 days after chemotherapy (post-test 2).	A 30-minute educational program was given before chemotherapy. Participants were given a 16-page booklet after the training. The booklet and educational sessions covered the following topics: (1) definition (nausea, vomiting), (2) etiology, (3) pathophysiology, (4) types of nausea and vomiting, (5) therapeutic strategies, (6) non-pharmaco-logical methods, (7) nutrition, and (8) prevention strategies.	In post-test 1, the severity of nausea was significantly lower in the experimental group than in the control group. The same occurred in post-test 2. The frequency of vomiting did not differ significantly between the experimental and control groups in either post-test 1 or post-test 2 (p>0.05).
13	Loerzel et al. (2020) *Using Serious Games to Increase Prevention and Self-Management of Chemotherapy-Induced Nausea and Vomiting in Older Adults With Cancer*	80 elderly patients (aged 60 years or older) and newly diagnosed with cancer were recruited from the community cancer centre. Participants were randomized into intervention (n = 38) and control (n = 42) groups. A symptom management checklist was used to record preventive and self-management behavior and was used after home chemotherapy. Acceptability and usability were assessed using a short survey.	The intervention was divided into two parts: 1) playing a serious game on an iPad in the therapy room before receiving the first chemotherapy; and 2) discussing the outcome with the research nurse. Participants played through a 3-day simulation scenario with various opportunities to make decisions for their avatars.	The intervention group displayed more preventive behaviors, while the control group used more self-management behaviors. Antiemetics were the most commonly used strategy, followed by dietary strategies. Participants rated all aspects of the game seriously in terms of usability and acceptability.

Table 1. Data Analysis

No.	Author, Year, Title	Methods	Intervention	Results
14	Chang et al. (2020) *The effectiveness of a nurse-led exercise and health education informatics program on exercise capacity and quality of life*	RCT. Patients who had undergone esophagectomy for cancer were recruited through purposive sampling from a medical center in Taiwan. Patients who met the inclusion criteria and agreed to participate (N = 88) were randomly assigned to either an informatics training program (intervention group, n = 44) or usual postoperative care (control group, n = 44). Quality of life was measured at baseline, and 1, 3 and 6 months after the patient was discharged. Secondary nutritional outcomes (albumin, BMI) and exercise capacity were measured at baseline and 3 months after discharge. Differences in quality of life, nutrition, and exercise capacity between the two groups were analyzed using generalized equivalence estimates.	The intervention group received a health education informatics program and training for 12 weeks in addition to usual care. The program consists of three parts: a home walking exercise program, a nursing education program, and instructions for using the information system. The walking program included moderate-intensity walks after meals, 3 – 5 days per week for 30 minutes each; a total of 150 minutes per week. Exercise data were obtained from the number of walks, blood pressure and pulse monitored by the smart bracelet.	Functional scores of physical health (1 & 3 months), role (1, 3, & 6 months), emotional (1 month), social (3 months) and global health (3 months) were significantly higher in the intervention group. Cancer-associated subscales improved for insomnia (1 & 3 months) and nausea and vomiting (3 & 6 months). Specific symptoms of esophageal cancer improved in relation to dry mouth (1 month), dysphagia (3 months), and loss of taste (1 & 6 months). 3 months after discharge, albumin levels were significantly higher for the intervention group.
15	Izgu et al. (2020) *Inhalation aromatherapy on nausea, vomiting and anxiety during autologous hematopoietic stem cell transplantation: An open-label randomized controlled trial*	Open-label randomized controlled trial. The study was conducted at two stem cell transplantation units in Ankara, Turkey. A total of 70 patients were randomly assigned to either an intervention (n = 35) or a control group (n = 35).	Patients in the intervention group inhaled the odor from six drops of pure orange essential oil during AHSCT. Those in the control group received routine care. Nausea severity was evaluated at baseline and the beginning of each new infusion bag. The level of vomiting and retching episodes was recorded during the AHSCT. Anxiety levels were measured just after the completion of the AHSCT.	Inhalation aromatherapy with orange essential oil may be useful to alleviate anxiety during AHSCT; however, it does not appear to decrease the severity of nausea, nor the number of vomiting and retching episodes.
16	Rafiee Sarbijan Nasab et al. (2021) *Effect of Abdominal Massage with and without Salvia officinalis on Nausea and Vomiting in Patients with Cancer Undergoing Chemotherapy: A*	RCT. 60 patients undergoing chemotherapy at Kerman University of Medical Sciences, Kerman, southeastern Iran were divided into intervention groups (A and B, @ 20 patients) and a control group (C, n = 20). Nausea and vomiting were measured by VAS.	Group A received abdominal massage without Salvia officinalis, performed for 15 minutes for three consecutive days, twice a day at 08.30 and 20.30, on an empty stomach. Massage started from the beginning of the ascending colon, clockwise, towards the horizontal colon and finished at the end of the descending colon. Swedish massage included strokes, effleurage, vibration and kneading. Group B	Immediately after the intervention, the mean nausea score in group B was lower than in the control group. The mean score of nausea in group A and the control was no different. One week after the intervention, the mean nausea score did not differ between the three groups. The frequency of vomiting also did not differ.

Table 1. Data Analysis

No.	Author, Year, Title	Methods	Intervention	Results
	Randomized Clinical Trial		received massage with 2 mL of 100% aromatic Salvia officinalis substance. Group C received routine care.	
17	Cheng and Tan (2021) *A pilot study of the effect of a home-based multimodal symptom-management program in children and adolescents undergoing chemotherapy*	An exploratory randomized pilot study with qualitative interviews. 50 patients aged between 10 and 18 were randomized into either the symptom management program plus usual care (intervention, n = 25) or usual care (control, n = 25) group. Target symptoms were measured at baseline (after diagnosis), the first 2 weeks of each chemotherapy cycle, and 6 months after baseline, using the Memorial Symptom Assessment Scale and the State Anxiety Scale for Children.	Psychoeducational program intervention providing information to children, adolescents, and their families about the knowledge, skills, and support needed for symptom prevention and management. The content consisted of non-pharmacological interventions (progressive muscle relaxation, distraction strategies, guided imagery, energy conservation, food preparation advice, oral care, and warm cold compresses).	The intervention group experienced lower fatigue ($p < .05$). However, there were no differences in nausea, vomiting, pain, mucositis, and anxiety between the groups. Both the children and the parents reported positive experiences with the symptom management program.
18	Efe Ertürk and Taşcı (2021) *The Effects of Peppermint Oil on Nausea, Vomiting and Retching in Cancer Patients Undergoing Chemotherapy: An Open Label Quasi–Randomized Controlled Pilot Study*	Quasi-randomized controlled study. 80 patients were recruited from the outpatient chemotherapy unit of a general hospital in Batman, Turkey, between September 2017 and September 2018. 36 patients were placed in the intervention group, and 44 into the control group. Data were collected using patient information forms; VAS, to measure the severity of nausea; patient watch charts; the Index of Nausea, Vomiting, and Retching, Aromatherapy Practice Guide; and patient opinion forms regarding aromatherapy practices.	Participants in the intervention group administered 1 drop of the aromatic mixture between the upper lip and nose (philtrum), 3 times daily for 5 days after chemotherapy, in addition to routine antiemetic therapy. They were asked to take a deep breath after using the aromatic mixture. The control group only received routine antiemetic therapy.	VAS scores for nausea were lower in the intervention group and there was a significant difference in the frequency of nausea and vomiting in all chemotherapy regimens, except for cisplatin ($p < 0.05$).
19	de Souza et al. (2021) *Nutritional intervention contributes to the improvement of symptoms related to quality of life in breast cancer patients undergoing neoadjuvant chemotherapy: A*	RCT. 34 women with breast cancer undergoing neoadjuvant chemotherapy were divided into an intervention group (IG, n = 19) and a control group (CG, n = 15). Measurements were taken at the beginning before the start of the first cycle of chemotherapy (T0), during the second and third cycles (T1, T2), and at the end of the third cycle (T3).	All participants received nutritional advice on healthy eating and nutritional information for reducing CINV. Only the IG received individual personalized diet plans from dietitians based on age, current weight, and height.	CG significantly decreased hand grip strength (HGS), while IG showed no change in this variable. For QoL, GI plays a better role in function and nausea, vomiting and appetite than CG. For haematological and gastrointestinal toxicity, GI had less leukopenia and abdominal pain.

Table 1. Data Analysis

No.	Author, Year, Title	Methods	Intervention	Results
	randomized clinical trial			
20	Mao et al.(2021) *Effect of Electrical Stimulation on Gastrointestinal Symptoms in Lung Cancer Patients during Chemotherapy: A Randomized Controlled Trial*	RCT. A total of 122 lung cancer patients receiving chemotherapy were assigned randomly to a control group (usual care group, n = 61) and intervention group (TAES plus GES, n = 61). *TAES: transcutaneous acupoint electric stimulation; GES: gastric electrical stimulation	TAES involved two acupoints, Neiguan (PC6) and Zusanli (ST36). GES was performed at gastric pacing sites on the body surface, such as the locations of projection of gastric antrum and corpus on the body surface. GES was performed on these sites for 14 days continuously (25 min each time, once daily). The effects of TAES and GES on GI symptoms were assessed using the Memorial Symptom Assessment Scale on the day prior to chemotherapy (time point 1) and on days 14 (time point 2) and 28 (time point 3) after chemotherapy	Differences in symptom occurrence and severity at time point 1 were not statistically significant between the two groups. At time points 2 and 3, GI symptoms such as loss of appetite, nausea, vomiting, diarrhea, and constipation in the stimulation group had statistically significantly improved compared with the control group. TAES and GES were efficacious in relieving GI discomfort in lung cancer patients after chemotherapy.
21	Semerci et al. (2022) *The effect of using an interactive mobile application for the management of chemotherapy-induced nausea and vomiting in children: Randomized controlled study*	A prospective, parallel-group and randomized controlled study. It was conducted in a university hospital between October 2019 and January 2021 with 57 children aged 8–18 years who were being treated with chemotherapy, together with their mothers.	In this study, a mobile application called “5inD” was developed, which included five distraction methods to reduce CINV. Data were collected about CINV through the Adapted Rhodes Index for Nausea & Vomiting child version (ARINVc), and parent version (ARINVp). The CINV of the children was evaluated for seven days, starting from the first day of chemotherapy.	The interactive mobile application was found effective in reducing CINV in the children. Additionally, it can be said that 5inD is more effective for the management of acute CINV than delayed CINV.

in the frequency of nausea and vomiting in all the chemotherapy regimens, apart from cisplatin (Ertürk & Taşcı, 2021). Another type of aromatherapy that can be used is orange essential oil. Izgu et al. (2020) used this to control nausea, vomiting and anxiety during autologous hematopoietic stem cell transplantation (AHSCT) by masking the malodor of dimethyl sulfoxide. As in the case of peppermint oil, inhalation aromatherapy with orange essential oil is effective in alleviating anxiety during AHSCT. The results of these studies can be used as a recommendation for the management of post-chemotherapy nausea and vomiting with low emetogenic agents as a safe additional antiemetic therapy.

Another self-management strategy is environmental modification (Ferrell & Paice, 2019). Dadkhah et al. (2019) conducted a RCT on gastrointestinal cancer patients given chemotherapy. Their study modified the environment by providing soothing sounds combined with relaxation interventions. The patients received two concurrent interventions (music therapy and periorbital massage). The music therapy involved soothing music including classical (e.g., Beethoven) and traditional types, played for 45 minutes during chemotherapy via an MP3 player and headphones. An electronic eye massager was placed over the patient's eyeball for 15 minutes during chemotherapy. Such music therapy combined with periorbital massage significantly reduced nausea and vomiting in patients in the intervention group undergoing chemotherapy compared to those in control group.

Psychological strategies can be employed by using relaxation and meditation, practicing deep breathing, or using cognitive distraction (Ferrell & Paice, 2019). A study of a 3-arm RCT involving solid tumour patients undergoing chemotherapy in Texas employed behavioural intervention techniques such as mindfulness relaxation (MR) and relaxation music (RM) (Hunter et al., 2020). Participants in the MR group received guided mindfulness/awareness exercises, imagery, and relaxation practices for around 20 minutes, which were repeated during chemotherapy. The RM group heard recordings in an identical way to that of MR group, but without specific relaxation/meditation instructions, just relaxing music with sounds of nature or vocal tracks. As a control, a standard care group (SC) only received information about post-chemotherapy symptom management. Compared to the SC group, there was lower anticipatory nausea during chemotherapy in the MR and RM groups.

Semi-experimental research conducted by Karimi et al. (2017) also used a psychological approach in the form of a self-education program. Colorectal cancer patients undergoing chemotherapy received a self-care exercise package about what to do before and after chemotherapy, including progressive muscle relaxation, music therapy and nutrition education. The education was conducted over 12 sessions and educational tools included pamphlets, brochures, pictures, and videos. The sessions took place for two months and lasted 45 – 60 minutes. Positive results were obtained, with a significant reduction in the intensity and frequency of nausea and vomiting after the intervention. This indicates that the self-care program was effective and improved the patients' self-care ability to control nausea and vomiting. A positive outcome of the self-education approach in the intervention group was also reported by Bayati et al. (2019) in relation to all functional (physical, role function, emotional, cognitive, social) and symptomatic (fatigue, nausea and vomiting, pain, dyspnea, sleep disorders, diminished appetite, constipation, and diarrhea) dimensions of quality life. The intervention provided integrated training over four sessions of 60 minutes, with one session per week on spiritual care, emotional care, diet, and symptom management. Different results were obtained in a randomized exploratory pilot study with qualitative interviews conducted by Cheng and Tan (2021). Their study involved psychoeducational interventions in patients aged between 10 and 18 years. Information provided to the children, adolescents and their families concerned the knowledge, skills and support needed for symptom prevention and management. The content consisted of non-pharmacological interventions in the form of progressive muscle relaxation, distraction strategies, guided imagery, energy conservation, food preparation advice, oral care, and cold/warm compresses. Although both children and their parents reported positive experiences with the symptom management programs, there was no difference in the incidence of nausea and vomiting in the intervention and control groups.

A 30 minutes educational program was developed in semi-experimental research by Ince and Usta (2020) in Turkey, which was given to lung cancer patients before chemotherapy. Participants were given 16-page booklet containing the following topics: (1) definition (nausea, vomiting); (2) etiology; (3) pathophysiology; (4) types of nausea and vomiting; (5) therapeutic strategies; (6) non-pharmacological methods; (7) nutrition; and (8) prevention strategies. The severity of nausea was significantly lower in the experimental group than in the control group. However, the frequency of vomiting did not differ significantly between the experimental and control groups. Structured education provided by nurses had a positive effect on the severity of nausea. Nurses were able to improve nausea management in cancer patients more effectively with educational interventions.

Dignity therapy implemented by Zaki-Nejad et al. (2020) was divided into three sessions. Session I was an introduction to the approach. The protocol consisted of 13 questions about important aspects of participants' life and anything they wanted to record as a memory. In session II (24 – 48 hours later), the researchers guided participants to talk about important aspects of their lives and whatever they wanted to record as memory based on certain questions in the protocol. The interview was recorded then transcribed and reviewed. At session III (three days later) the transcribed recording was read to the participants and corrected if necessary. The final version of the text was given to participants to share with their loved ones. Dignity therapy was found to improve quality of life in the intervention group and also to improve nausea, vomiting, and other symptoms in the palliative phase. Another intervention in the form of perceptual stress reduction control was analyzed in the study of Cao et al. (2020). Breast cancer patients undergoing surgical intervention and chemotherapy were given such intervention through dilution therapy and meditation before going to bed. After measuring the outcome, the intervention was shown to effectively relieve bone marrow suppression, digestive tract discomfort (nausea, vomiting, diarrhoea), and symptoms of breast discomfort, as well as improving health promotion behavior.

A unique intervention was performed by Loerzel et al. (2020) on elderly patients (60 years or older). It was divided into two parts: 1) playing a serious game on an iPad in the therapy room before receiving the first chemotherapy; and 2) discussing the outcome with the research nurse. The serious game focused on making prevention and self-management decisions for avatars, who, like the participants, were receiving their first chemotherapy and were going to manage any side effects independently at home. The participants played through a 3-day simulation scenario with various opportunities to make decisions for their avatars. Involving patients in self-care simulations can also be used as an effective approach. The distraction approach was used by Semerci et al. (2022) to manage CINV pediatric oncology patients. An interactive mobile application called 5inD was developed, which included five distraction methods to reduce CINV (music, puzzles, mandalas, blowing exercises, and Tetris). The study showed that the interactive mobile application was effective in reducing CINV in children.

Other self-management strategies include physical activity or exercise. An exercise program of low, moderate or high intensity, combined with resistance and aerobic exercise, can result in better physical functioning, improved cardiorespiratory fitness, less nausea and vomiting, less pain, better muscle output and less physical fatigue (van Waart et al., 2015). An exercise program combined with health education was employed by Chang et al. (2020). The program consisted of three parts: a home walking exercise program, a nursing education program, and instructions for using the information system. The walking program included moderately intensive walks after meals, 3 – 5 days per week, with each lasting 30 minutes, totalling 150 minutes per week. A positive outcome was indicated by a significant improvement in nutrition, exercise capacity, and variables related to quality of life and its subscales (insomnia, nausea, and vomiting).

Different results were obtained by Anestin et al. (2017) who conducted Balinese yoga intervention in breast cancer patients experiencing CINV. The program was run for 8 weeks alongside standard treatments and consisted of 8 weekly group sessions of 90 minutes duration, with five participants per group, led by one instructor. Participants were also given DVDs in 20- and 40-minute formats. However, there was no significant difference between the experimental and control groups with regard to

CINV after 8 weeks. These results indicate that such a yoga program is not beneficial in managing CINV. However, considering the preliminary evidence showing the beneficial impact of yoga in the management of cancer symptoms, methodological limitations should be explored, and additional studies should be conducted.

Integrative therapy such as abdominal massage was investigated by Nasab et al. (2021) in an RCT of patients undergoing chemotherapy. Patients in the intervention group received abdominal massage with or without Salvia officinalis, performed for 15 minutes over three consecutive days, twice a day on an empty stomach. Swedish massage included strokes, effleurage, vibration and kneading. The mean score of nausea in the intervention group was lower than in the control group immediately after the intervention. However, after one week of intervention, the mean scores of nausea and vomiting did not differ. Abdominal massage with or without Salvia officinalis had little effect on reducing nausea and vomiting in cancer patients undergoing chemotherapy. Another study integrated electrical stimulation with traditional Chinese medicine (Mao, et al. 2021). Transcutaneous acupoint electric stimulation (TAES) and gastric electrical stimulation (GES) were given to lung cancer patients receiving chemotherapy. It was shown that TAES and GES were effective in relieving GI discomfort, including nausea and vomiting, in lung cancer patients after treatment.

Conclusion

Several studies have highlighted the management of nausea and vomiting using non-pharmacological interventions, such as self-management strategies. Such strategies can be undertaken through dietary and environmental modifications, psychological strategies, and other strategies (exercise, abdominal massage, etc.). The interventions discussed in this article can be applied by patients as directed or instructed by healthcare teams. Nurses play an important role in educating patients on non-pharmacological interventions and encouraging them to achieve self-efficacy. Further research or exploration of other non-pharmacological interventions with larger sample sizes or better methodologies are needed to provide more accurate results. Case studies regarding such interventions could also be conducted to support their application in daily practice.

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Risk Factors for Hypertension Among Adults Living in A Rural Area, Minahasa

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Abstract

Hypertension is a major public health issue in Indonesia due to its high prevalence and the fact that it is a risk factor for heart disease, kidney failure, and stroke. Age, gender, family history, alcohol consumption, smoking, iodine consumption, physical activity, and obesity are all risk factors for hypertension. Adults with undiagnosed hypertension can face an increased risk of morbidity and mortality if it is left untreated. Early detection and knowledge about the risk factors for hypertension in adults are important. This cross-sectional study aimed to investigate the risk factors for hypertension in adults in Mapanget Village, North Minahasa. The sample size was 384 respondents, and the sample was obtained using convenience sampling. Data were collected using an online questionnaire and analyzed using a Chi-square test. The study found a relationship between hypertension and family history (p = 0.01), obesity (p = 0.03), smoking (p = 0.01), physical activity (p = 0.01), and alcohol consumption (p = 0.01). This study recommends people live a healthy lifestyle by controlling their blood pressure and weight, not drinking alcohol, not smoking, and engaging in physical activities that are appropriate given their abilities.

Keywords: adults, blood pressure, healthy lifestyle, hypertension

Abstrak

***Faktor Risiko Hipertensi pada orang Dewasa yang Tinggal di Pedesaan Minahasa**. Hipertensi merupakan masalah kesehatan yang utama di Indonesia karena prevalensinya yang tinggi dan menyebabkan komplikasi seperti penyakit jantung, gagal ginjal, dan stroke. Faktor risiko yang berhubungan dengan kejadian hipertensi yaitu usia, jenis kelamin, riwayat keluarga, asupan alkohol, merokok, asupan konsumsi yodium, aktivitas fisik, dan obesitas. Tujuan dari penelitian ini adalah untuk menganalisis faktor risiko yang berhubungan dengan kejadian hipertensi pada usia dewasa di Desa Mapanget, Minahasa Utara. Jenis penelitian ini adalah kuantitatif korelasional dengan desain* cross sectional*. Sampel dalam penelitian ini berjumlah 384 orang. Instrumen penelitian menggunakan kuesioner. Analisis data menggunakan* Chi-square*. Hasil penelitian didapatkan bahwa riwayat keluarga (p = 0,001), obesitas (p = 0,033), merokok (p = 0,005), aktivitas fisik (p = 0,004), dan konsumsi alkohol (p = 0,009) Mimouna hubungan yang signifikan terhadap kejadian hipertensi di Desa Mapanget, Minahasa Utara. Sedangkan jenis kelamin (p = 0,334) tidak berhubungan dengan kejadian hipertensi di Desa Mapanget. Rekomendasi dari penelitian ini adalah agar masyarakat melakukan gaya hidup sehat dengan mengontrol tekanan darah dan berat badan, tidak mengonsumsi alkohol, menghindari rokok, dan melakukan aktivitas fisik sesuai dengan kemampuan fisik.*

***Kata Kunci:** dewasa,* healthy lifestyle*, hipertensi, tekanan darah*

Introduction

Hypertension is a major public health issue in Indonesia in that it contributes to heart disease, kidney failure, and stroke (Ministry of Health Republic of Indonesia, 2021). Hypertension is defined as a continuous increase in systolic blood pressure to 140 mmHg or more and/or an increase in diastolic blood pressure to more than 90 mmHg (Potter et al., 2013). Hypertension was diagnosed when blood pressure measurements were taken within two days and a systolic blood pressure of 140 mmHg or more a diastolic blood pressure of 90 mmHg or more was obtained (World Health Organization [WHO], 2023).

Hypertension is usually asymptomatic until complications develop in the target organs. Headache or heaviness in the neck, dizziness, palpitations, fatigue, blurred vision, ringing in the ears (tinnitus), and nosebleeds are some of the signs and symptoms of hypertension. The number of adults with hypertension increased from 594 million in 1975 to 1.13 billion in 2015, with the majority of the increase occurring in low- and middle-income countries. An estimated 46% of adults with hypertension are unaware of their condition (WHO, 2023). In Indonesia, the prevalence of hypertension in the population aged 18 years or more has increased to 34.1%, up from 25.8% in 2013. Women have a prevalence of 36.9%, while men have a prevalence of 31.3%. The age group of 18 – 24 years has a hypertension prevalence of 13.2%, the age group of 25 – 40 years has a prevalence of 20.1%, and the age group over 75 years has a prevalence of 69.5%. North Sulawesi has the highest prevalence of hypertension, at 13.2% among people over the age of 18 (Badan Litbangkes Kementerian Kesehatan RI, 2019). In North Minahasa, there are 16,380 cases of hypertension (Badan Pusat Statistik Minahasa Utara, 2016).

Age, gender, and genetics are among the modifiable risk factors for hypertension. Other risk factors that can be modified include smoking, a low-fiber diet, dyslipidemia, excessive salt consumption, a sedentary lifestyle, stress, and being overweight or obese (Ministry of Health Republic of Indonesia, 2021). A study found that having a BMI of 25 increased the risk of experiencing hypertension by 3.05-fold, having a family member with hypertension increased the risk by nearly 3-fold, and not drinking alcohol reduced the risk of hypertension by 70% (Ondimu et al., 2019). Other studies have found that smoking and drinking alcohol are related to hypertension, whereas someone who engages in sufficient exercise typically has normal blood pressure. Patients with diabetes, individuals with a history of cardiovascular disease, and post-menopausal women are at risk for hypertension (Dhungana et al., 2016). Obesity, poor diet, physical activity, stress, smoking, poor sleep, and alcohol use are all risk factors for hypertension in young adults (Susiani, 2019).

Hypertension can lead to issues such as atherosclerosis, heart attack, stroke, an enlarged heart, and kidney damage. Adults with undiagnosed hypertension can face an increased risk of morbidity and mortality. Because hypertension is a chronic disease that can lead to death if left untreated, early detection and knowledge about hypertension risk factors in adults are important. The goal of hypertension treatment is to reduce the risk factors for hypertension. However, it is unclear which risk factors contribute to hypertension in adults in Minahasa. Thus, this study aimed to investigate the factors that contribute to hypertension in adults in Mapanget Village, North Minahasa.

Methods

The method employed in this study is cross-sectional. The target population of this study was adults in Mapanget Village, North Minahasa. The researcher used an estimation formula with an unknown population size (N), a 95% confidence level (Z = 1.96), and an 80% research power (Z = 0.842) to determine the sample size. In this study, the estimated minimum sample size is 308. The sampling technique employed is convenience sampling, which involves taking samples at random and wherever possible. Adults aged 19 to 44 years old were considered eligible (Ministry of Health Republic of Indonesia, 2016). Individuals who refused to participate in the study were excluded. This study was conducted in Mapanget Village, North Minahasa, from March to April 2021.

The dependent variable was the incidence of hypertension in adults, and the independent variables were gender, family history, smoking, obesity, physical activity, and alcohol consumption. The researchers define hypertension as a continuous increase in systolic blood pressure to 140 mmHg or higher and/or an increase in diastolic blood pressure to more than 90 mmHg that has been diagnosed by a doctor and treated with antihypertensive medications. The research instrument was a questionnaire taken from the Ministry of Health Republic of Indonesia (2011), number KOHORTPTM.2011.IND, and the Global Physical Activity Questionnaire (GPAQ). The KOHORT PTM scale is a self-report tool for use in assessing risk factors for noncommunicable diseases. The KOHORTPTM instrument has 16 domains, but only two are included in this study: smoking habits and alcohol consumption. Each question is answered dichotomously. Smoking habits are removed as "current smoker" or "never a smoker." A current smoker is defined as an adult who has smoked 100 cigarettes in his or her lifetime and continues to do so. Never smokers are adults who have never smoked or have smoked less than 100 cigarettes in their lifetimes. Alcohol consumption refers to the consumption of alcoholic beverages. Women should limit their alcohol consumption to one drink per day, while men should limit their consumption to two drinks per day.

The GPAQ is a tool developed by the Ministry of Health Republic of Indonesia to assess physical activity. The GPAQ records the amount of time spent each week performing various types of physical activity and consists of 16 questions. The QPAQ classifies physical activity as moderate if the total metabolic equivalents (METs) are 600 or more or as low if the total METs per week are less than 600.

The researchers developed a web-based survey and distributed it to a professional network of research members in the research area. This is considered the best way to access the target population given the social distancing restrictions in place. Data analysis is performed using the Chi-square test to determine how independent variables such as gender, family history, obesity, smoking, physical activity, and alcohol consumption are related to the risk of hypertension in rural residents of Minahasa.

The study was approved by the Research Ethics Committee of the Faculty of Nursing Universitas Pelita Harapan (No: 053/RCTC-EC/R/I/2021). The researcher considered several factors in this regard, including informed consent, anonymity, confidentiality, beneficence, and nonmaleficence. Each subject was informed of the

Table 1. Respondent characteristics (n = 308)

Characteristics	Total	Percentage (%)
Hypertension		
Yes	28	9.1
No	280	90.9
Gender		
Male	117	38
Female	191	62
Family history		
Yes	202	65.6
No	106	34.4
Obesity		
Yes (BMI ≥ 30)	11	3.6
No (BMI < 30)	297	96.4
Smoking		
Current smoking	76	24.7
Never smoking	232	95.7
Physical Activity		
Less activity (Metabolic Equivalent/ week < 600)	74	24
Vigorous activity (Metabolic Equivalent/ week ≥ 600)	234	76
Alcohol consumption		
Yes	127	41.2
No	181	58.8

Table 2. Factors associated with hypertension among adults.

Variable	Hypertension				Total		p	OR
	Yes		No					
	n	%	N	%	n	%		
Gender								
Male	13	4.22	104	33.76	117	37.9	0.33	1.46 (0.67–3.20)
Female	15	4.87	176	57.14	191	62.01		
Family history								
Yes	26	8.44	176	57.14	202	65.58	0.01	7.68 (1.78–33.02)
No	2	0.64	104	33.76	106	34.41		
Obesity								
Yes (BMI ≥ 30)	3	0.97	8	2.59	11	3.57	0.03	4.08 (1.01–16.35)
No (BMI < 30)	25	8.11	272	88.31	297	96.42		
Smoking								
Current smoking	13	4.22	63	20.45	76	24.67	0.01	2.98 (1.35–6.60)
Never smoking	15	4.87	217	70.45	232	75.32		
Physical activity								
Less activity (Metabolic Equivalent/ week < 600)	13	4.22	61	19.80	74	24.02	0.01	3.11 (1.40–6.89)
Vigorous activity (Metabolic Equivalent/ week ≥ 600)	15	4.87	219	71.10	234	75.97		
Alcohol consumption								
Yes	18	5.84	109	35.38	127	41.23	0.01	2.82 (1.25–6.34)
No	10	3.24	171	55.51	181	58.76		

study's objectives, risks, and benefits and was asked to sign a consent form. All personal information provided by the respondents was kept strictly confidential.

Results

The characteristics of the respondents are summarized in Table 1. According to Table 1, there were 28 hypertense respondents (9.1%) and 280 non-hypertense respondents (90.9%). The majority of respondents (62%) were female, and 65.6% had a family history of hypertension. There were 11 obese respondents (3.6%) and 297 non-obese respondents (96.4%). The majority of respondents (95.7%) had never smoked, engaged in vigorous activity (76%), and did not drink alcohol (58.8%).

Table 2 shows the correlation between gender, family history, obesity, smoking, physical activity, and alcohol consumption and hypertension among adults in Mapanget Village, North Minahasa. Table 2 reveals a relationship between family history and hypertension (p-value 0.01). Respondents who have a family history of hypertension are at 7.6 times higher risk of experiencing hypertension than those without a family history. Obesity was associated with hypertension (p-value 0.01), and obese people have a 4.0-fold higher risk of developing hypertension than non-obese people. The findings also showed a relationship between smoking and hypertension (p-value 0.01), with smokers having a 2.9-fold higher risk of developing hypertension than nonsmokers. A lack of physical activity was associated with hypertension (p-value 0.01), and respondents who exercised less had 3.1 times per week faced a higher risk of experiencing hypertension. Alcohol consumption was associated with hypertension (p-value 0.01), and respondents who consumed alcohol faced a 2.8-fold higher risk of experiencing hypertension as compared to respondents who did not consume alcohol.

Discussion

Gender is a risk factor for hypertension. Men are more likely to experience hypertension due to the low estrogen levels in the body as compared to women, who have high estrogen levels in their bodies before menopause (Pérez-López et al., 2010). Furthermore, women have more arterial estrogen receptors than men, so they are less likely to experience hypertension. Estrogen inhibits sympathetic nerve activity by activating nitric oxide, resulting in vasodilation (Reckelhoff, 2018). However, after the age of 60, females are more likely than males to have hypertension. The older the participants were, regardless of gender, the more likely they were to have hypertension (Choi et al., 2017). The participants in this study are adults aged 19 to 44 years old, and there is no relationship between gender and hypertension. This study follows research in Nigeria and Jati Luhur Health Center Bekasi, which found no relationship between gender and hypertension (Ajayi et al., 2016; Maulidina, 2019). In fact, hypertension is a serious condition that requires medical attention and lifestyle changes, regardless of gender.

Family history is also considered a risk factor for hypertension. Specifically, it is an important non-modifiable risk factor. Blood relatives tend to have many of the same genes that can predispose a person to hypertension. Genes are the genetic units that are passed from parents to their children. Relatives may share similar habits, such as diet, exercise, and smoking, all of which can increase the risk of hypertension (Centers for Disease Control and Prevention, 2005). High sodium-lithium counter-transport, low urinary kallikrein excretion, elevated uric acid levels, high fasting plasma insulin concentration, high-density LDL sub-fraction, high blood pressure index, fat pattern, oxidative stress and body mass index, sodium intake, and heavy metal exposure are all genetic factors associated with high blood pressure (Ranasinghe et al., 2015). The finding showed a relationship between family history and hypertension. There were several associations found between family history and hypertension prevalence. In Saudi Arabia, researchers found that individuals with a family history of hypertension are at a two-fold higher risk of experiencing hypertension as compared to people without a family history of hypertension (Shah et al., 2015). These results are consistent with a study on pre-hypertension among young adults (20 – 30 years old) in Udupi District, South India, which found an association between family history and hypertension (Desai et al., 2021).

Body mass index (BMI) is an indicator of nutritional status in adults, and it is calculated by dividing an individual's weight by the square of their height. According to WHO guidelines, obesity is defined as a body mass index of 30 kg/m2 (Tumwesigye et al., 2020). Obesity or weight gain will result in increased cardiac output and peripheral arteriole resistance (Singh et al., 2017). Obesity activates mineral corticosteroid receptors that are not affected by aldosterone or angiotensin II. Increased visceral adiposity is associated with excess body weight, which can increase the risk of hypertension by 65 to 75% (Hall et al., 2015). Obese people have more adipose tissue, which increases vascular resistance and, as a result, the stress on the heart when pumping blood. Hyperinsulinemia and insulin-induced salt retention are two additional pathways involved in obesity-induced hypertension (Alsmadi et al., 2014; Channanath et al., 2015). Obesity has been linked to an increased risk of hypertension. This is consistent with previous research indicating a link between excess body fat and hypertension. The results also showed a relationship between obesity and hypertension. Research conducted in India and the United States found a relationship between obesity and hypertension in both sexes and at all ages (Ramya et al., 2016; Papathanasiou et al., 2015).

Smoking habits are often associated with an increased risk of hypertension for both smokers and ex-smokers (Wu et al., 2018). Smoking is a major cardiovascular risk factor for heart and blood disease. This is due to the nicotine and carbon monoxide content in cigarettes (Bruno et al., 2018). The nicotine content will affect the heart rate and blood pressure through the release of catecholamines and sympathetic nerve stimulation. Nicotine, which stimulates the sympathetic nerves, causes an increase in the heart rate and blood pressure by increasing the release of epinephrine and norepinephrine (Leone, 2015). Long-term smoking increases blood pressure, which can lead to inflammation, endothelial dysfunction, plaque formation, and vascular damage (Gumus, 2013). The findings showed a relationship between smoking and hypertension. A study conducted in Vietnam also found a relationship between smoking and hypertension. Men who smoked faced a higher risk of hypertension than nonsmokers, which was dose-dependent (the more cigarettes smoked per day, the higher the increase in blood pressure (Cuong et al., 2019).

Physical activity is a form of self-control used to maintain or lose weight. Obesity prevention and moderate to vigorous physical activity can significantly reduce the risk of hypertension (Egan, 2017). Physical activity is defined as any movement of the limbs that results in an increase in energy expenditure above the resting level, as well as routine daily tasks, such as work, commuting, household activities, and other activities. This movement is caused by skeletal muscle contraction (Diaz & Shimbo, 2013). Physical activity is calculated by multiplying the weekly frequency by the duration of each activity performed and is classified as less activity, moderate activity, or strenuous activity (Santana et al., 2018). A lack of physical activity can increase the risk of obesity and lead to hypertension (Sihotang & Elon, 2020). Controlling and preventing hypertension requires not only pharmacological intervention but also healthy lifestyles that includes physical activity (Abrignani, 2018). Regular physical activity for 40 minutes per session three times per week can help to control or prevent hypertension (Brooks & Ferro, 2012). Adults should be able to perform at least 150 minutes of moderate-intensity aerobics per week or 75 minutes of vigorous aerobics per week. Physical activity helps to strengthen the heart, lungs, bones, and muscles. It can also help regulate a person’s weight and blood pressure. Physical activity has been shown to help prevent and manage high blood pressure. Our results showed a relationship between physical activity and hypertension. Research in Malaysia and India has found a relationship between physical activity and hypertension. People who engaged in moderate physical activity had a 40% higher risk of developing hypertension as compared to those who engaged in vigorous physical activity (Loh et al., 2013; Singh et al., 2017).

In several major countries around the world, alcohol is a major risk factor for disease. In the Western Pacific and the Americas, alcohol is the leading cause of disease, and in parts of Europe, it is the second leading cause of disease (Pereira et al., 2013). People who are healthy or have hypertension must be able to control their lifestyles, such as controlling and reducing their alcohol consumption if they are currently consuming excessively (Roerecke et al., 2018). The renin-angiotensin system in the body can be influenced by alcohol consumption. Excessive alcohol consumption can cause the renin-angiotensin system to become activated. When there is an increase in alcohol consumption that affects the renin-angiotensin system, fluid and electrolyte balance changes, and arterial blood pressure rises (Toffolo et al., 2014). Our results showed a relationship between alcohol consumption and hypertension. According to studies conducted in Australia and the United States, there is a correlation between alcohol consumption and the risk of hypertension. People over the age of 18 in Australia who have consumed excessive amounts of alcohol in the previous four weeks are at risk of experiencing hypertension. Alcohol consumption of seven to 13 glasses per week may increase the risk of experiencing stage-one or -two hypertension (Aladin et al., 2019; Pereira et al., 2013). Indonesia has a diverse ethnic population. Every ethnic group has unique cultures and traditions. North Sulawesi is famous for a liquor called saguer. Saguer has become a product closely associated with the Minahasa people. Palm trees, or saguer trees, produce saguer, a white liquid that tastes sweet when freshly harvested. Saguer is made through a natural fermentation process, has a sour flavor, and contains about 5% alcohol. Saguer is still used in traditional rituals and is considered a sacred drink.

This study focused on investigating the risk factors for hypertension in adults. It is essential to investigate the risk factors for hypertension so that adults can begin taking preventive measures at a young age. Healthy lifestyle changes are urgently needed to help control hypertension, such as reducing salt consumption, engaging in regular physical activity (such as walking 3 km/exercise 30 minutes per day at least 5 times per week), not smoking, eating a balanced diet, and reducing alcohol consumption. This study sampled only residents of Mapanget Village, North Minahasa. Thus, the results may not be representative and cannot be generalized to all of Indonesia's diverse regions. A study with a more representative sample is needed given Indonesian pluralism.

Conclusion

The factors that contribute to hypertension include family history, BMI, smoking habits, physical activity, and alcohol consumption. The goal of hypertension treatment is to decrease the risk factors for hypertension.

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Strategies for Supporting Healthcare Workers' Resilience and Mental Health During A Pandemic: A Scoping Review

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Abstract

As a group, health workers are at risk of experiencing stress and mental health problems at work, which may negatively affect their resilience. This study assessed the effectiveness of mental health support strategies for health workers during the COVID-19 pandemic. This scoping review followed the Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines in searching through three journal databases, such as: EBSCO, Scopus, and PubMed. The quality of the studies was assessed with the Crowe Critical Appraisal Tool, and the results of the review emerged from a process of synthesis that identified common themes. The search yielded five main articles. The results of the synthesis process inspired several recommended strategies to support the resilience and mental health of health workers during a pandemic, including personal management, psychoeducational, and counselling approaches. It is important to work in partnership with stakeholders and across sectors to derive the maximum benefit from these interventions.

Keywords: health workers, mental health, pandemic, resilience

Abstrak

***Strategi untuk Mendukung Resiliensi dan Kesehatan Mental Tenaga Kesehatan saat Pandemi:* Scoping Review.** *Tenaga kesehatan adalah kelompok dengan risiko mengalami masalah kesehatan mental, seperti stress, di tempat kerjayang dapat berdampak negatif pada ketahanan/resiliensi. Tinjauan literatur ini bertujuan untuk menilai efektifitas strategi pendukung kesehatan mental tenaga kesehatan selama pandemi* COVID-19. Scoping review *dilakukan dengan menggunakan* PRISMA guidelines *dalam melakukan pencarian pada tiga* database *jurnal, yaitu* EBSCO, Scopus *dan* PubMed. *Kualitas studi dinilai dengan* Crowe Critical Appraisal Tool. *Hasil ulasan diformulasikan melalui proses narasi berulang dari hasil sintesis untuk mengidentifikasi tema umum. Pencarian pada tiga* database *menghasilkan lima artikel utama. Melalui proses sintesis, didapatkan beberapa strategi yang diketahui efektif dalam meningkatkan kesehatan mental tenaga kesehatan. Strategi yang dimaksud dapat berupa manajemen pribadi, kegiatan konseling bersama ahli, dan pelatihan/pendidikan terkait manajemen stres. dukungan* stakeholder *dan lintas sektor menjadi hal yang penting untuk memaksimalkan manfaat intervensi.*

Kata Kunci: *tenaga kesehatan, kesehatan mental, pandemi, resiliensi*

Introduction

Evidence shows that healthcare workers are a group at risk for short- and long-term mental health problems during an infectious disease pandemic. The factors affecting mental health during a pandemic include burnout syndrome, depression, post-traumatic stress disorder, anxiety, increased family responsibilities, increased workload, decreased access to necessary tools and equipment, guilt, uncertainty, and adapting to unfamiliar workplaces or schedules (Centers for Disease Control [CDC], 2019; Chinvararak et al., 2022; Houghton et al., 2020; Shanafelt et al., 2020).

During a pandemic, healthcare workers may experience concerns about the risk of being infected with an infectious disease, which negatively affects the mental health of staff, the quality of care provided to patients, and the capacity of the healthcare system to respond to increased care needs during the pandemic (Kang et al., 2020). The symptoms that may be experienced by health workers include stress, anxiety, reduced motivation, fatigue, sadness, depression, and difficulty sleeping or concentrating. This situation can result in unhealthy behaviors, such as drug and alcohol abuse, that may contribute to a decreased ability to function in the workplace. In addition, these unhealthy behaviors may be associated with impaired family functioning and domestic violence, further exacerbating depression, anxiety, and stress and negatively affecting the ability to function in the workplace. Healthcare workers with mental health problems may have high rates of absenteeism (Robertson et al., 2020).

Stress at work can negatively affect healthcare workers' resilience, but personal development and learning to adapt have the potential to build resilience and enhance the ability to cope with stressful situations in the future. Strategies to maintain resilience in the workplace may incorporate relationship development (e.g., through mentoring) and maintaining a healthy work-life balance (CDC, 2019; Robertson et al., 2020).

Healthcare workers throughout the world have had to deal with challenges, such as increasing patient mortality, growing healthcare demands, medical supply shortages, and tremendous physical and emotional stress. Furthermore, the duration of this unpredictable crisis and the extent of its effect on normal life remain unknown. Health statisticians anticipate that COVID-19 will continue to be a public health disaster in the future. Aside from the acute challenges caused by this crisis, the ripple effect of postponed medical procedures, research, and clinic visits will continue to put strain on healthcare workers and the health system in the future. It is becoming easier, however, to find information on topics such as the epidemiology of the disease, its etiology, and infection control and prevention (Sorbello et al., 2020).

The current understanding is that healthcare workers need resilience to handle difficult situations. Although workplace resilience is drawing more attention, the topic of resilience among healthcare professionals needs further research, particularly in relation to employee retention. Recently, more attention has been given to the concept of developing *resilience*, defined as the ability to resist the disruption of regular functioning by expecting and preparing for a painful experience. Furthermore, it has been proposed that resilience may be a key distinguishing characteristic between health workers who experience burnout and those who do not (Fox et al., 2018; Schreiber et al., 2019; Walsh, 2015).

Future healthcare crises will induce the same psychological pain as the present pandemic. To address this psychological anguish, it is critical that measures be developed and implemented to promote healthcare workers' resilience (Heath et al., 2020). Several interventions promote resilience among healthcare workers to prevent the development of ill health among them, such as relaxation, stress management, psychological services, regular rest, healthy eating, adequate physical activity, support from family and coworkers, controlling maladaptive coping strategies, limiting the use of online social media, and encouraging the expression of gratitude (Baskin & Bartlett, 2021; Verbeek et al., 2019).

It is necessary to pay attention to the potential long-term impact on healthcare workers. Healthcare providers can implement strategies such as rotating employees, partnering experienced and inexperienced employees, monitoring work breaks, offering flexible schedules, and providing social support. This study assessed the effectiveness of strategies to support the resilience and mental health of healthcare workers during the COVID-19 pandemic. The results provide further recommendations of effective strategies for healthcare institutions to maintain the mental health of health workers on the front line in the pandemic era.

Methods

This study adopted a scoping review method based on the Joanna Briggs Institute's JBI Manual of Evidence Synthesis to address the predetermined objectives (Peters et al., 2020) by discovering and synthesizing representative literature to establish new frameworks and views on the chosen topic. The process includes (1) defining the purpose, (2) defining inclusion criteria, (3) defining a strategy for seeking, selecting, and extracting articles, (4) analyzing evidence, (5) presenting results, and (6) summarizing the evidence.

Three authors (IMMYS, GAB, and EO) simultaneously searched the selected databases, namely PubMed, EBSCO-Medline, and Scopus. The search was limited to articles published in English in the past five years for which the full text was available. The authors also established inclusion criteria for the selecting articles: (a) the article described strategies/interventions to support the mental health and/or resilience of health workers, and (b) the study design was an observational or clinical trial. The exclusion criteria were letters, abstracts, and research taking the form of a review.

The strategy to determine search terms for articles was based on the population/patient, intervention, comparison, and outcome (PICO) method and used the following parameters: *population*: professional health workers, intervention; *technique/intervention*: to support mental health and resilience; *comparison*: no comparison; and *outcome*: mental health and resilience. These PICO parameters yielded the following search terms: ("healthcare professional," OR nurse OR doctor OR midwife OR "healthcare worker") AND ("mental health promotion" OR "mental health intervention" OR "resiliency promotion" OR "resiliency intervention") AND (stress OR depression OR resilience OR "quality of life" OR "burnout syndrome"). Data synthesis was performed by extracting important attributes in the articles, which were then elaborated into structured points, including sample size, type of intervention, time of observation, measurement, and study result. Table 1 shows the results of the synthesis.

Before the data extraction process, the quality of the articles was reviewed using the Crowe Critical Appraisal Tool (CCAT) to determine the suitability of their content. A CCAT assessment is conducted by looking at the points yielded by each of eight categories to disqualify research articles that earn a high score overall but a very low score in a given category. The form consists of 8 categories and 22 items, each category having a possible score between 0 and 5, which is awarded based on the item descriptors presented. The more descriptors checked, the higher the score. However, the evaluation is not solely based on the descriptors, as the importance of each item is also taken into account. To calculate the total CCAT score as a percentage, the sum of the eight category scores is multiplied by a maximum score of five and then divided by 40. The CCAT assessment ensures that each category is considered to avoid a high overall score masking poor performance in specific areas. Neglecting to assess each category would result in poor performance in one or more areas being hidden by the overall score. Ultimately, the appraiser's judgment determines the entire appraisal procedure (Crowe, 2013).

Results

The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) 2020, by Page et al. (2021), guided the search for articles, which returned five articles as the main sources of this paper. Figure 1 shows the PRISMA flow diagram. All the studies were conducted in different places, including the USA (Nathan et al., 2021), Portugal (de Pinho et al., 2021), Germany (Mache et al., 2017), Australia (Rees et al., 2020), and Spain (Blanco-Donoso et al., 2021).

The studies varied in their sample size (13–821), study design, measures, and recommended strategies. Table 1 shows the descriptive characteristics of the five included studies, while Table 2 provides the results of the article quality assessment. The average total score for each assessment category is close to the maximum

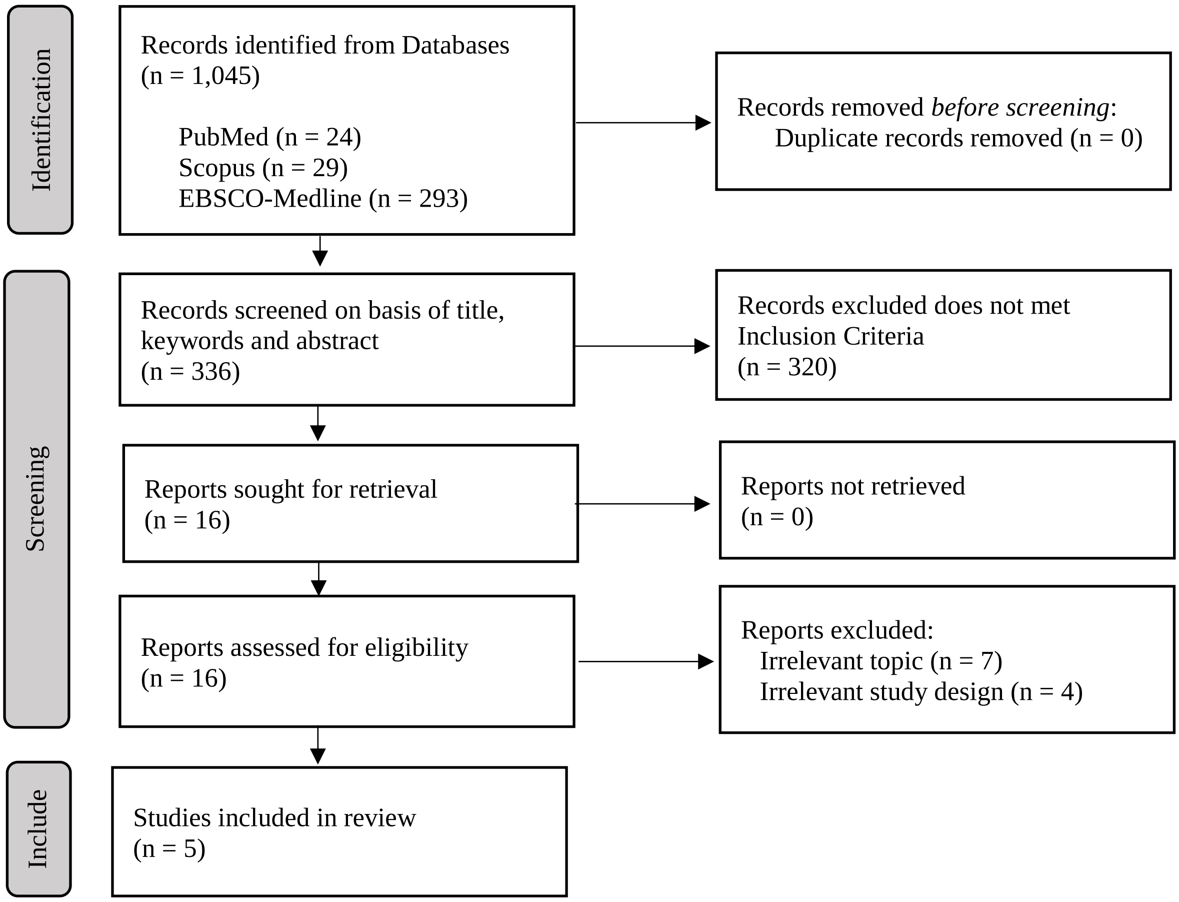

Figure 1. Literature Search Flow Based on the PRISMA Guideline

score, with scores representing better results the closer they are to 5 for each assessed point. Thus, the five articles are of suitable quality.

Discussion

This study assessed the effectiveness of strategies to support the mental health of healthcare workers during the COVID-19 pandemic. The findings reveal that training programs that support mental health and resilience effectively improve the emotional health of healthcare workers. The most recent research, however, focuses on counseling, psychoeducational therapies, and mindfulness-based therapy, which may be used to lessen the psychological toll that the COVID-19 crisis has had on all healthcare workers.

The results of the synthesis identify several strategies that are known to be effective in improving the mental health of health workers. These may take the form of personal management, including taking breaks during shift changes, initiating and maintaining a healthy diet, maintaining mineral water consumption, exercising, employing self-relaxation techniques, engaging in recreational activities, maintaining social relationships with family and friends, expressing emotions constructively, and avoiding hoax information related to COVID-19. In addition, counseling activities with experts and training/education related to stress management are known to have good effectiveness (Blanco-Donoso et al., 2021; de Pinho et al., 2021; Nathan et al., 2021; Rees et al., 2020).

Stress management training can be provided to improve the mental health of nurses and other health workers, and offering an understanding of mental health efforts is a crucial element in

Table 1. Characteristics of the Articles

Author, Year, and Country	Design	Sample Size	Recommended Strategies	Study Result
de Pinho et al., 2021 Portugal	Cross-sectional	821 clinical nurses	Mental health literacy promotion	Nurses who followed the strategies had less stress and used more strategies to improve mental health than other nurses.
Mache et al., 2017 Germany	Pilot study of randomized control trial	80 doctors	Work-related self-care strategies, problem-solving techniques, solution-focused counselling	The intervention group showed lower work stress and emotional exhaustion than the control group.
Nathan et al., 2021 USA	Pilot study	32 doctors	Stress management and resiliency training	Respondents who received weekly text messages showed a significant increase in mindfulness awareness and had lower stress levels compared to those who did not receive text messages.
Rees et al., 2020 Australia	Sequential mixed-methods study	13 doctors	Mindful self-care and resiliency program	A majority of doctors showed a decrease in fatigue and stress after joining the program. Qualitative data show that that respondents had good self-awareness, reflection, and self-care after joining the program. The respondents also reported increased social interaction.
Blanco-Donoso et al., 2021 Spain	Mixed methods design	22 health workers	Acceptance and commitment (ACT) stress management	The experimental group showed a significant reduction in their levels of depression and stress compared to the control group.

increasing resilience and reducing burnout in a pandemic. The results of the study suggest that nurses who have received mental health training have a high level of resilience when facing stressful situations, in this case the pressure of the COVID-19 pandemic. The results of Blanco-Donoso et al.'s research, which evaluated the Acceptance and Commitment (ACT) based stress management training implemented for one month, reveal a decrease in stress and depression levels in nurses working in the intensive care unit (ICU) (Blanco-Donoso et al., 2021; de Pinho et al., 2021).

Nathan et al. (2021) tested the six-hour of Stress Management and Resiliency Training for Residents (SMART-R) program, which sends the healthcare workers text messages that teach relaxation, appropriate coping techniques, and awareness of stress. Health workers who received weekly messages had higher awareness and resilience than those who did not receive messages. The authors suggest implementing this intervention in addition to stress management training intervention. Ultimately, de Pinho et al. (2021) argue that hospital managers should prioritize mental health improvement support for healthcare workers who have not received specialized mental health training. Furthermore, de Pinho et al. (2021) also stated that both during and even after pandemic conditions, it is necessary to continually remain alert to the emergence of symptoms of depression and anxiety resulting from stress during the pandemic.

Rees et al. (2020) evaluated the Mindful Self-Care and Resiliency program on six doctors in the Australian outback. The program, which comprised four hours of face-to-face engagement and a video conference follow-up, promotes participants' self-awareness and ability to reflect, be more relaxed, and interact with other people. The authors found that six of the seven doctors experienced a decrease in burnout and psychological stress.

High levels of stress and depression in healthcare workers existed long before the COVID-19 pandemic, but the pandemic has made it increasingly clear that healthcare workers' emotional stress is a real problem. Effective intervention requires a comprehensive approach that is able to integrate various complementary and interrelated aspects. The severity of the COVID-19 pandemic is exposing healthcare workers to a unique cause of stress, which requires healthcare institutions to respond and support their workers in new and innovative ways (Hall et al., 2020; Irfan et al., 2020; Vizheh et al., 2020).

Workplace administrators and managers need to ensure that health workers can actively use available resources. Generally, despite the pandemic, health workers are known to experience high rates of mental health problems but show reluctance to seek help. To carry out professional responsibilities during difficult workplace-related events, such as death and illness, healthcare providers frequently disregard their emotions and adopt an impersonal attitude, which can damage their long-term emotional well-being (Bohlken et al., 2020; Shanafelt et al., 2020). The reluctance of health workers to seek mental health assistance reflects concerns over stigma in the workplace and negative professional consequences (Chirico et al., 2021; Wessely & Gerada, 2013). This behavior was demonstrated by health workers during the COVID-19 pandemic as shown in the inadequate use of psychological support resources by hospital staff (Huffman et al., 2021; Krystal et al., 2021). A study found a low awareness among health workers about the use of mental health improvement services provided by healthcare institutions; health workers stated that they preferred hospital managers to prioritize resources that met their physical needs over their psychological well-being (Cheng et al., 2012).

The impact of persistent stressors causes many health workers to experience chronic stress, but the availability of mental health professionals for healthcare workers has proven beneficial in promoting treatment-seeking behavior. In addition, ensuring the sustainability of the intervention is a very important mechanism that merits consideration. Managers of healthcare institutions must have the infrastructure to identify people with mental problems related to stress and similar factors. People can strengthen long-term resilience by following healthy lifestyle, diet, and exercise habits as well as by re-engaging in activities that bring them a greater sense

Table 2. CCAT Result

No.	Author	*Scoring categories and items*										Summary
		Preliminaries	*Introduction*	*Design*	*Sampling*	*Data collection*	*Ethical matters*	*Results*	*Discussion*	Total (/40	Total (%)	
1	de Pinho et al., 2021	4	3	4	3	3	4	4	4	29	73	Fair
2	Mache et al., 2017	4	4	3	4	4	4	4	3	30	75	Good
3	Nathan et al., 2021	4	4	4	4	3	4	4	3	30	75	Good
4	Rees et al., 2020	4	4	4	4	4	4	4	4	32	80	Good
5	Blanco-Donoso et al., 2021	4	3	4	3	3	4	4	4	29	73	Fair

of personal meaning (Croghan et al., 2021; Gray et al., 2021; Spoorthy et al., 2020; Tan et al., 2020).

There is currently insufficient experimental data to report on strategies for boosting healthcare workers' resilience (Delgado et al., 2017; National Academies of Sciences, Engineering, and Medicine, National Academy of Medicine, & Committee on the Future of Nursing 2020–2030, 2021). Managers of healthcare workers can evaluate the emotional state of those working on their units on an individual basis. Healthcare worker managers or leaders should remind staff members that they are allowed to communicate their feelings and concerns in an open manner to destigmatize obtaining help for mental health challenges (Tomlin et al., 2020). Encouraging the expression of appreciation is another method that may be effective in fostering individual healthcare personnel resilience (Kim et al., 2019).

Tomlin et al. (2020) describe the COVID-19 pandemic's stages and the steps that healthcare organizations can take to help their staff become more resilient based on the stage of the pandemic. The stages include the preparation phase, pre-phase, initial/core phase, and longer-term phase of the pandemic. During the preparation phase, it is necessary for managers to comprehend the requirements of their workforce and identify if any team members may be more susceptible than others to experiencing mental health issues. Additionally, during the pre-phase, team grounding plays a vital role. This involves recognizing the emotional and cognitive information shared within a group, acknowledging it, and utilizing it to create an agenda for discussion. Furthermore, in the initial/core phase, effective communication will be crucial. It is important to deliver timely, precise, and evidence-based information about the virus and the hospital's response, including worst-case scenarios. Finally, longer-term phase, after the COVID-19 pandemic has subsided, organizations are expected to evaluate what happened and how they responded to it.

The results present some beneficial mental health and resilience programs and may be useful to hospital managers when managing healthcare workers. Despite our best efforts, our review has significant limitations that must be considered, for instance, a paucity of sources and bias in the selected publication and reports, including selection bias that occur when the inclusion and exclusion criteria are not applied consistently, and reviewer bias that occur when the reviewers have pre-existing beliefs or preferences that influence the interpretation of the evidence, as these aspects may impact both the quality and quantity of the studies and constrain this study's conclusiveness.

Conclusion

The COVID-19 pandemic has made it clear that mental health problems in healthcare workers are real. It represents a turning point to accelerate the progress needed to reduce stigma and expand access to mental health support for health workers. Future healthcare crises will continue to cause psychological distress among healthcare personnel, so it is imperative to develop and implement strategies to strengthen healthcare workers' resilience to alleviate this psychological suffering. To ensure that healthcare workers feel valued and heard, organizations may need to hire additional support staff or reallocate staff, change their revenue distribution, revise reimbursement and compensation models through negotiations with internal and external stakeholders, and take other actions.

Due to the present success in slowing COVID-19's spread in many countries, there is now more time and opportunity to be proactive in putting measures into place that will improve, restore, and preserve health workers' resilience now and in the future. The current literature on techniques for mitigating the psychological problem caused by the pandemic may be useful for healthcare professionals while also exploring proactive holistic measures.

It is of paramount importance to conduct studies to assess the effectiveness of interventions in supporting the resilience and mental health of health workers during a pandemic. Further studies should be carried out with proper planning, including development, peer review, and planning for follow-up. Given that many health workers will experience stress and anxiety, it is important to work with stakeholders and across sectors to derive the maximum benefit from interventions.

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The Influence of Gender and Hope on the Resilience of Bullied Adolescents

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Abstract

Bullying is currently a national concern in Indonesia. Many of the country’s children and adolescents have taken their lives due to a lack of resilience in the face of bullying. However, some studies have revealed that victims can survive the adverse effects of bullying. This study aimed to analyze the roles of hope and sociodemographic characteristics in the resilience of bullied adolescents in Indonesia. The study used a cross-sectional design and selected 305 bullied high school students in Semarang as participants through purposive sampling. The Adolescent Resilience Scale and the Children’s Hope Scale were used to measure the participants’ resilience and hope. A multiple linear regression test was applied to analyze the influence of hope and sociodemographic characteristics on resilience. The results showed that gender (β = -0.149, p = 0.001) and hope (β = 0.571, p = 0.001) significantly influenced the resilience of the bullied adolescents. Working through schools’ health units, nurses should establish partnerships with stakeholders, such as school personnel and parents, to develop hope-based intervention programs aimed at enhancing the resilience of bullied adolescents.

Keywords: adolescents, bullying, hope, resilience

Abstrak

Pengaruh Gender dan Harapan terhadap Resiliensi Remaja Korban Perundungan. *Fenomena perundungan di Indonesia saat ini telah menjadi perhatian nasional. Banyak anak dan remaja yang bunuh diri karena tidak kuat menghadapi perundungan. Namun, penelitian mengungkapkan bahwa beberapa korban dapat bertahan dari dampak buruk perundungan. Penelitian ini bertujuan untuk menganalisis peran harapan dan karakteristik sosiodemografi terhadap resiliensi remaja korban perundungan di Indonesia. Penelitian ini merupakan penelitian* cross-sectional *dengan 305 siswa SMA korban perundungan di Kota Semarang terlibat sebagai responden yang dipilih melalui teknik* purposive sampling. *Kuesioner* Adolescent Resilience Scale *(ARS) dan* Children's Hope Scale *(CHS) digunakan untuk mengukur resiliensi dan harapan remaja korban perundungan. Uji regresi linier berganda digunakan untuk menganalisis pengaruh harapan dan karakteristik sosiodemografi terhadap resiliensi atau ketahanan. Hasil penelitian menunjukkan jenis kelamin (β = -0.149, p = 0.001) dan harapan (β = 0.571, p = 0.001) secara signifikan mempengaruhi resiliensi remaja korban perundungan. Perawat, melalui Unit Kesehatan Sekolah (UKS), perlu menjalin kemitraan dengan pemangku kepentingan seperti guru di sekolah dan para orang tua, guna mengembangkan program intervensi berbasis harapan yang bertujuan untuk meningkatkan resiliensi remaja korban perundungan.*

Kata Kunci*: harapan, perundungan, remaja, resiliensi*

Introduction

In Indonesia, bullying is a serious social problem that has gained considerable attention in recent decades. According to the Indonesian Child Protection Commission, there were 26,000 reported cases of bullying between 2011 and 2017 (Abdillah et al., 2020), with an increasing trend that reached 75 cases per year (Chandra, 2019; Maradewa, 2019). In the city of Semarang, 45% of adolescents have experienced bullying (physical, verbal, relational, or online), and 47% of those who have been bullied suffered from multiple bullying incidents in high school (Zulfa & Dewi, 2019).

Bullying can have significant impacts on psychological and physical well-being. Adolescents who are bullied tend to experience repeated trauma, which can increase the risk of aggression toward themselves or others, attention deficits, and somatic symptoms such as sleeping difficulty, bed-wetting, headaches, and fatigue (Delara, 2016; van Geel et al., 2016). Furthermore, bullying can lead to school-related problems, difficulties with self-concept, and issues with interpersonal relationships (Delara, 2016; Hana & Suwarti, 2020; Povedano et al., 2015). Victims of bullying may also experience decreased appetite, low self-esteem, anxiety, and depression (Bakar & Syafruddin, 2017).

However, some victims are able to withstand these stressors and adapt to their environment (Akasyah, 2018; Mullin, 2019). Scholars often refer to this ability to adapt as resilience. Several studies have found that personal factors, such as hope, can have a positive impact on resilience in adolescents. Hope is defined as a dynamic motivational experience that is produced through two types of cognitive tools, known as pathways and agency thinking, which are used to achieve goals (Snyder et al., 1997). Researchers have shown that hope significantly contributes to resilience across a wide section of the population (Cathlin et al., 2019; Noroozi et al., 2020; Togo et al., 2018; Yıldırım & Arslan, 2020). However, hope has received less attention in bullying studies. Most of these studies have explored the influence of risk factors on resilience and bullying incidence (Demmrich & Akgül, 2020; Sarifa & Mahanani, 2020; Shams et al., 2017; Söderberg & Björkqvist, 2019; Suryani et al., 2019) as well as the consequences of bullying (Evans et al., 2019; Hana & Suwarti, 2020; Putra & Dendup, 2020).

Nursing is well positioned to make a significant contribution to the prevention of bullying by identifying protective factors that can promote resilience appropriately. Therefore, the aim of this study is to examine the roles of hope and sociodemographic characteristics in the resilience of bullied adolescents in Indonesia.

Methods

Design and setting. The study used a cross-sectional design and was conducted between April and July 2020. The aim was to analyze the effects of hope, age, and gender on the resilience of bullied adolescents. The research population consisted of students from three public high schools in Semarang.

Sample. The following inclusion criteria were used: (1) an experience of bullying in the previous year, (2) permission from one’s parents or guardians, and (3) a willingness to participate in the study. The sample was recruited using purposive sampling. Of the 4,060 students assessed, 1,372 met the inclusion requirements. The Slovin formula was used to select 309 participants, but only 305 were ultimately included in the analysis as four of them returned incomplete questionnaires.

To determine whether the high school students met the inclusion criteria, they were asked to rate the frequency of self-reported bullying and victimization experiences in the past six months on a 5-point Likert scale (“never”: score of 0; “rarely”: score of 1; “sometimes”: score of 2; “often”: score of 3; “always”: score of 4). A Google Form was used for this process. If a student reported a bullying experience with a score of at least 1, they were included as a participant. If a student reported no experiences of bullying and victimization, they were given a score of 0, and the Google Form automatically discontinued the process.

Instruments

Hope. The Children’s Hope Scale was developed by Snyder et al. (1997) and translated into Indonesian by Widiasmara (2019). The scale measures the level of hope in children aged 8–18 and consists of six questions with two subdomains: agency and pathways. The three odd-numbered items belong to the agency domain, while the three even-numbered items belong to the pathway domain. Examples of the agency items include “I think I am doing pretty well” and “I think the things I have done in the past will help me in the future,” while examples of the pathway items comprise “I can think of many ways to get the things that are most important to me in life” and “When I have a problem, I can come up with many ways to solve it.” The 5-point Likert scale responses range from “never” to “always,” with each item scored from 1 to 5. Higher scores indicate greater hope, while lower scores suggest the opposite. The α coefficient of the scale was 0.735.

Resilience. The Adolescent Resilience Scale (ARS) was developed by Oshio and Nakaya (2013) to measure the psychological features of resilient adolescents; it was translated into Indonesian by Zulfa and Dewi (2019). The ARS comprises 21 question items divided into three domains: novelty seeking, emotional regulation, and positive future. The Likert scale ranges from 1 (“definitely no”) to 5 (“definitely yes”). According to Oshio and Nayaka (2013) a higher score indicates a more resilient person, while a lower score suggests greater vulnerability. The ARS has been shown to be reliable, with a reliability value of 0.749.

Sociodemographic questionnaire. The demographic data consisted of the age and gender of the adolescents, which were obtained during the data collection process. Age was represented numerically, while gender was described in terms of frequency and percentage.

Data Collection. Due to the COVID-19 pandemic, the researchers used Google Forms as a data collection method. After obtaining permission from the three public high schools, the vice principals of student affairs were contacted to explain the purpose of the study and the data collection mechanism. The researchers requested the assistance of the vice principals in selecting which classes would qualify; a total of 21 classes were selected. The researchers then met with the classroom teachers to discuss the data collection process and provided them with the Google Forms link, which the teachers shared with the class chat group. During data collection, certain problems were encountered, such as limited internet access for some students and missing responses on the form, which resulted in the failure to attain the desired sample size. As a solution, the data collection period was extended by two weeks.

The Google Form was composed of an informed consent form, an agreement form, and questionnaires. The parent’s informed consent form was placed on the first page of the form, followed by the parent’s agreement form, the student’s informed consent form, and the student’s agreement form. If both the parent and the student agreed, the student could access the questionnaire. However, if either the parent or the student disagreed, the questionnaire would not be accessible. Only the researchers could access the questionnaires.

Data Analysis. The adolescents’ characteristics (age and gender), hope, and resilience were analyzed and presented through the use of frequency, percentage, and mean ± standard deviation. Bivariate analysis was used to test the independent variables (hope, age, and gender) and the outcome variable (resilience). The Pearson product-moment correlation coefficient was used for age and hope, while a t-test was conducted to evaluate gender. In the multivariate analysis, only the independent variables that had significant correlations with the result being modeled were considered. Subsequently, multivariate linear regression models were utilized to predict the resilience of bullied adolescents.

Ethical Considerations. This study was approved by the Health Research Ethics Committee of the Department of Nursing, Faculty of Medicine Universitas Diponegoro (reference number 02/EC/ KEPK/D.Kep/IV/2020). As the study involved children under the age of 21, written consent was obtained from parents or guardians. However, the researchers also sought consent from the adolescents; if a student declined to participate, they were not included. Thus, the study required approval from both parents and adolescents. The informed consent form explained that participation was voluntary, withdrawal was allowed without consequences, and confidentiality would be strictly maintained.

Results

The study had a total of 305 respondents, with an average age of 16.53 ± 0.68 years old, and a majority of girls. The results revealed that emotional regulation had a higher score than novelty and positive future as a domain of resilience. Moreover, agency/willpower had a higher grade than pathway/way power as a domain of hope. The Pearson product-moment correlation coefficient indicated a positive relationship between hope and resilience. A gender-based difference was observed in the resilience of girls and boys. These results are presented in Table 1.

Before conducting the multiple linear regression, the researchers tested the assumptions of linearity, independence, homoscedasticity, and normality and confirmed that all of these assumptions were met. The regression model revealed that gender ($\beta = -0.149$, $p = 0.001$) and hope ($\beta = 0.571$, $p = 0.001$) had significant effects on the resilience of bullied adolescents. The model explained 35.5% of the variance in bullied adolescent's resilience, as shown in Table 2.

Table 1. Distribution of Personal Characteristics and Hope in Relation to Bullied Adolescents' Resilience

Variables	f	%	Mean ± SD	p	Multivariate
Resilience			78.75 ± 7.87		
Novelty			26.72 ± 2.89		
Emotional regulation			29.63 ± 5.41		
Positive future			22.38 ± 2.91		
Hope			22.92 ± 3.35	0.000[a]	0.000
Agency/willpower			11.49 ± 1.72		
Pathway/way power			11.43 ± 2.12		
Age (years)			16.53 ± 0.68	0.853[a]	
Gender				0.003[b]	0.001
Boys	116	38.0			
Girls	189	62.0			

Notes: [a] Pearson product-moment; [b] t-test

Table 2. Multiple Linear Regression Model of Bullied Adolescents' Resilience

Model	Unstandardized coefficients				R	R square	F (p)
	B	Std. error	β	t (p)			
(Constant)	1.95	2.833		18.334 (0.000)	0.596	0.355	83.026 (0.000)
Gender	-2.416	0.749	-0.149	-3.225 (0.001)			
Hope	1.340	0.109	0.571	12.343 (0.001)			

Discussion

This study found that the agency domain had a higher percentage than the pathway domain. Adolescents often devise many ways through which they hope to fulfill important desires in their lives. Internal hopes are the more dominant form of hope among respondents who are victims of bullying; this includes being able to start a conversation and wanting to be appreciated by others (Chasanah et al., 2015). Adolescents imagine these things and desire to achieve them. They want to experience, reach, and create hope as well as make it achievable (Chasanah et al., 2015). Synder et al. (1997) developed the concept of hope with two dimensions: (1) agency, which refers to the determination and commitment that helps an individual to act toward the achievement of goals and serves as a driving force of hope; and (2) pathway, which refers to the individual's perceived ability to find out one or more effective ways to achieve his or her goals. Several studies have reported that hope negatively correlates with depression. Individuals with high hopes tend to have lower depression levels than those with low hopes. Research in lower-middle-income countries showed that high school students who reported violence in the past month were more likely to feel sadness and hopelessness and have pessimistic attitudes toward the future (Låftman et al., 2018) than students who did not experience bullying. Furthermore, being a victim of bullying in childhood can lead to hopelessness and depression in adulthood due to humiliation and violent experiences (Bryson et al., 2021; Farrell, 2019). Hope can be used to predict the onset of depression and to intervene in depressive symptoms (Kwok & Gu, 2019).

Adolescents need encouragement and ways to overcome stressful conditions after bullying. Those with high agency are confident, can control themselves when facing difficult situations, are optimistic about their ability to solve problems without doing something negative, and can convince themselves that the tough circumstances they experience are a stepping stone in their lives (Hayat et al., 2022; Yıldırım & Arslan, 2020). Adolescents who have high pathway will not easily quit when they encounter obstacles on their chosen path; instead, they will look for alternative ways to overcome these problems (Yıldırım & Arslan, 2020). This is related to the task of adolescent development, in which they can accept themselves and have confidence in their abilities and strengthened self-control (Wong et al., 2021; Yıldırım & Arslan, 2020).

The data on participants' personal characteristics revealed that girls and boys differed in their levels of resilience. The girls demonstrated higher levels of empathy compared to the boys (Yuliani et al., 2018). Existing research suggests that girls tend to be more perceptive of others' emotions and thoughts; they also value more their friendships (Garandeau et al., 2022). Previous studies have found that victims of bullying exhibit higher levels of empathy than non-victims (Estévez et al., 2019; van Noorden et al., 2017; Zych et al., 2019). This may be due to victims' desire for assistance from their peers (Salavera et al., 2021). Another study found that boys tend to communicate less during times of adversity, such as bullying, which results in receiving less empathy and support than girls, who tend to communicate more and elicit greater support (Moral & Ovejero, 2021). In comparison to girls, boys are less likely to discuss topics such as peer aggression, gratuitous violence, self-defense, and violence in general, which may be connected to their higher tolerance of violence (Zeladita-Huaman et al., 2021).

The multiple linear regression analysis indicated that both hope and gender significantly influenced the resilience of bullied adolescents. Specifically, there was a positive correlation between hope and resilience. Hope involves setting goals, having the confidence and ability to work toward these goals, and deriving motivation from overcoming obstacles. Moreover, hope enables individuals to respond positively to adversity and generates positive emotions by making them perceive success in achieving goals (Ho & Chan, 2022). Adolescents who possess high levels of hope tend to have multiple goals and perceive these as challenges. They are more likely to achieve their goals, experience less distress and greater happiness, and recover faster from problems (Mullin, 2019). Previous research has emphasized the significant role of hope as a potential mechanism for coping with stressful experiences, such as bullying. Hope enables individuals to effectively manage stress and feel motivated to find solutions to a problem (Mullin, 2019). Higher levels of hope are associated with improved psychological adjustment in response to chronic stressors, including bullying (Cleveland & Sink, 2017). Researchers have also emphasized the role of hope in the recovery process, suggesting that this attitude helps individuals manage their negative emotions by strategizing ways to adapt to painful and stressful situations (Carney et al., 2019). Additionally, hope enables adolescents to respond constructively to adversity and is commonly defined as resilience.

In the context of resilience, hope plays a protective role by reducing negative emotions and aiding in stress recovery (Cathlin et al., 2019; Mullin, 2019; Noroozi et al., 2020; Togo et al., 2018; Yıldırım & Arslan, 2020). Resilience is defined as the ability to quickly recover from stress (Akasyah, 2018). In terms of gender differences, girls may find it challenging to avoid long-lasting experiences of bullying, which can cause significant pain (Sapouna & Wolke, 2013).

In the current study, hope and gender accounted for 35.5% of the effect on resilience, while the other factors accounted for 65.5%. Several studies have demonstrated that there are other protective influences (both internal and external) that contribute to resilience. Internal influences refer to personal characteristics such as self-control and an internal locus of control, whereas social support from sources including family, peers, and important people can be considered an external factor that encourages resistance to bullying (Bushati, 2020; Yule et al., 2019).

This study contributes fundamental knowledge of the impact of hope and gender on bullied adolescents' resilience. Comprehensive school-based programs should be considered a significant option to enhance resilience in adolescents experiencing repeated violence or bullying. To maintain the program's effectiveness, multiple components, including school support, parental involvement, peer relationships, and the bullied individuals, need to be engaged. This option must be considered because peer victimization significantly impacts resilience, as evidenced by research. Increasing resilience can have a positive effect on adolescents' ability to cope with negative events, such as bullying.

As hope is a significant factor in promoting emotional regulation in the context of bullying, the authors recommend incorporating hope into school programs to enhance students' resilience. Specifically, we suggest including hope-based interventions for bullying prevention based on the positive correlation between hope and resilience observed in this study. It is believed that implementing school programs that foster goal-oriented beliefs and cognitive pathways in adolescents can mitigate the vulnerability of victims and reduce bullying triggers. These programs should integrate the two dimensions of hope, namely agency, which allows students to cultivate "intentions to act" (particularly in preventing repeated bullying), and pathway, which helps to create ways to achieve their goals. According to Snyder (1997), pathway is associated with "the ability to act." In this context, bullying victims should be able to demonstrate the ability to resist or prevent recurring bullying episodes. It is believed that combining intent and intervention programs that support goal-oriented beliefs and teenage cognitive pathway will protect victims of bullying and reduce bullying triggers. In turn, this approach will strengthen adolescents' resilience.

Comprehensive school-based interventions should also include parent education programs, which are a crucial element of any complete anti-bullying scheme. These programs aim to provide parents with the necessary tools and resources to help their children cope with bullying. Generally, parent education programs consist of workshops, training sessions, and instructional materials covering a range of topics related to making adolescents resilient in bullying situations. These initiatives are designed to encourage parents to take an active role in preventing and responding to bullying. Parents who are educated about suitable ways to deal with this problem can better support their children and create a safer and more supportive internal and external environment for them.

Building a supportive peer network is crucial to the success of any anti-bullying program, and nurses can play an important role in this effort. Providing assistance to victims of bullying, holding bullies accountable for their actions, and fostering a healthy and inclusive school environment for all students are important steps to take for nurses. It is also crucial for students to clearly express hope by creating a positive school culture, reporting instances of bullying, and setting a good example for their peers.

Hope should be incorporated not only in the school system but also in individual counseling for bullying victims. As counselors, nurses can actively help students increase their confidence by seeking hope. The goal of the therapeutic nurse-client relationship is to develop a more positive outlook on life by increasing current hope, developing actions that bring hope to students, and reminding them of the need for concrete actions related to their hopes.

In this context, the use of structural equation modeling (SEM) for data analysis can be considered. Several new variables from psychological, spiritual, and social dimensions can be included in SEM to provide estimates of the relationship between latent constructs and their manifest indicators (through measurement models) and of the relationships among constructs (through structural models). SEM also allows for the comparison of models by selecting a suitable one from numerous alternatives. A qualitative approach is also necessary to enrich data by considering the perspectives of teachers, parents, and students. By doing so, a more comprehensive picture can be obtained regarding bullying and resilience. Furthermore, applying this study's research design to a larger population at all levels of formal education is recommended in order to strengthen the theory of resilience and bullying. Future scholars could attempt to conduct qualitative and longitudinal studies. Combining these two–methodologies will enable a more thorough analysis of the factors that impact the resilience of adolescents.

The authors minimized bias by adhering to the chosen inclusion criteria during sampling. Four individuals were excluded due to missing questionnaire data. The use of previously tested, highly valid, and reliable scales also reduced bias in this study.

However, several limitations need to be considered. First, the cross-sectional design of this study does not allow for a conclusion about whether hope caused high resilience. A longitudinal design could be utilized to analyze the role of hope in bullying victims.

Second, all the variables were measured through self-assessment based on the perspective of students who were victims of bullying. The participants' responses may have suffered from social-desirability bias. To increase the validity of the survey, multiple approaches and variables should be incorporated.

Third, the authors did not consider differences between students living with their parents and those living separately from them. Parental characteristics (e.g., occupation, age, marital status, and income) were also not evaluated and should be addressed in future studies.

Conclusions

This study shows that hope and gender have a significant influence on the resilience of bullied adolescents. This result provides an opportunity to implement hope-based interventions that focus on internal strength rather than simply treating the problem. The aim should be to increase resilience and reduce the frequency of repeated bullying episodes.

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The Quality of Life of Adolescents Experiencing Online Game Addiction During the COVID-19 Pandemic

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Abstract

The availability of the internet and the increase in stress in adolescents caused by the pandemic have led adolescents to frequently seek entertainment through online games. Online gaming can negatively impact adolescents by causing a decline in their physical health, psychological issues, difficulty forming healthy social relationships, and decline their quality of life. This study identified the relationship between online game addiction and the quality of life of adolescents during the COVID-19 pandemic. This research utilized a cross-sectional approach and involved 96 adolescents as the research sample selected using the incidental sampling method. Data collection was carried out using the Game Addiction Scale for Adolescent and WHOQOL-Bref, while the Spearman Rho test was used for data analysis. The results of the data analysis showed a significance p-value of 0.000 ($p < 0.05$) and $r = -0.711$, indicating that there was a unidirectional relationship between online game addiction and quality of life. Thus, it can be concluded that the higher the level of online game addiction, the lower the quality of life of adolescents.

Keywords: addiction, adolescent, online game, quality of life

Abstrak

Kualitas Hidup Remaja yang Mengalami Kecanduan* Game Online *Selama Pandemi COVID-19. *Ketersediaan internet dan meningkatnya stres remaja akibat pandemi membuat remaja sering mencari hiburan melalui* game online. *Bermain* game online *secara berlebihan dapat menyebabkan mereka mengalami kecanduan. Hal tersebut dapat menimbulkan dampak negatif seperti penurunan kesehatan fisik, masalah psikologis, hubungan sosial dan penurunan kualitas hidup mereka. Penelitian ini bertujuan untuk mengidentifikasi hubungan antara kecanduan* game online *dengan kualitas hidup remaja selama pandemi COVID-19. Penelitian ini menggunakan pendekatan* cross-sectional *dan memilih 96 remaja sebagai sampel penelitian yang dipilih dengan metode* incidental sampling. *Pengumpulan data dilakukan dengan menggunakan* Game Addiction Scale for Adolescent *dan* WHOQOL-Bref, *sedangkan analisis data menggunakan uji* Spearman Rho. *Hasil analisis data menunjukkan signifikansi nilai p sebesar 0,000 ($p < 0,05$) dan $r = -0,711$, menunjukkan bahwa terdapat hubungan searah antara kecanduan* game online *dengan kualitas hidup. Dengan demikian, dapat disimpulkan bahwa semakin tinggi tingkat kecanduan* game online *maka kualitas hidup remaja akan semakin rendah.*

Kata Kunci: game online, *kecanduan, kualitas hidup, remaja*

Introduction

The COVID-19 pandemic has led governments worldwide to apply social restrictions and enforce work-from-home and school-from-home measures. A school-from-home instructional format is likely to cause students to isolate themselves by engaging in other activities, such as playing video games (Ko & Yen, 2020). Social restrictions have been carried out with the aim of reducing and stopping the transmission of COVID-19. However, the application of social restrictions can have a negative impact, especially on psychosocial issues. Social distancing, self-quarantine, and regional quarantine have increased the risk of depression and anxiety (Marroquín et al., 2020; Venkatesh & Edirappuli, 2020). The increase in the rates of anxiety and depression (16 – 28%) is evidence of the general psychological reaction to the COVID-19 pandemic (Rajkumar, 2020). A total of 30.9% of severe psychological impacts due to the COVID-19 pandemic have been reported in the Middle East and North Africa (MENA) region (Al Dhaheri et al., 2021). Thus, the pandemic has caused a significant decrease in social welfare (Choi et al., 2021). Moreover, the impact is likely to be greater in developing countries (Melo & Soares, 2020). As a result, there is a significant relationship between psychological stress, such as anxiety and depression, and online game addiction in adolescents (Carras et al., 2020; Fazeli et al., 2020; Sitorus et al., 2020).

The COVID-19 pandemic has also led to an increase in internet dependence with a total of 46.8% of participants and 16.6% experiencing an increase in hours of internet use (Sun et al., 2020). The majority of adolescents use the internet 30 days a month (40%), and the majority use the internet for 1 – 2 hours a day (33%) (Ekayanti et al., 2019). The prevalence of severe internet dependence increased from 4.3% to 23% after the onset of the pandemic, and the dependence rate increased 20 times from 3% to 60% (Sun et al., 2020). The constant availability of the internet has led to a significant “gaming boom” in almost all age groups (Ružić-Baf et al., 2016).

The Special Region of Yogyakarta has infrastructure that supports adolescents in playing games online through a game center and internet connection. An online game is defined as a game that can be of various genres and can be played using an internet connection via a local area network (LAN) and Wi-Fi (Tang et al., 2017). The increasing features of online games and the number of new online games are attracting more adolescents who are spend-ing most of their time playing games daily (Lee & Kim, 2017). In Indonesia, the number of online game players reached 60 million in 2018 and is estimated to reach 100 million in 2020 (Mobile Marketing Association, 2019). Of the many online game players, most are male adolescents (Donati et al., 2021). Furthermore, it is predicted that there will be an increase in the hours spent playing online games via the personal computers (PCs) of adolescents addicted to online games (Kim & Lee, 2021). A person tends to experience online game addiction if they play games for a long time (Gentile et al., 2017). Addicted individuals are more likely to spend three hours or more a day playing games and play 4 – 5 days a week (Jap et al., 2013). Furthermore, adolescents are more at risk of experiencing online game addiction than adults (Choi et al., 2018). For instance, in Indonesia, it is estimated that 10.15 –10.3% of adolescents are addicted to online games (Jap et al., 2013; Sitorus et al., 2020). Adolescents are in a developmental period of searching for their identity, and their ability to reason logically is maturing during this time. Adolescents are not yet flawless in their ability to reason logically; thus, they often pay less attention to the risks of an action, one of which is addiction to online gaming.

Therefore, the phenomenon of online game addiction in adolescents requires serious research attention. The World Health Organization (WHO) has been considering addiction to online games as a mental health disorder, and in 2018 ‘gaming disorder’ was included in the eleventh edition of the International Classification of Diseases (ICD-11) (WHO, 2020). There is a relationship bet-ween online game addiction and the regulation of emotion in adolescents; out of 235 respondents, only 147 could highly regulate emotions (Nurazmi et al., 2018). The ability to communicate with others, engage in social engagement, and get enough sleep are all negatively correlated with an individual's level of online game addiction. (Fazeli et al., 2020; Yusuf et al., 2019). Thus, game addiction affects their quality of life.

Quality of life is an individual’s perception of both their physical and psychological position in the community, which aligns with society’s existing values, culture, hopes, expectations, and a multidimensional point of view (WHO, 2012). There are four dimensions of the concept of quality of life: the physical health dimension, the psychological dimension, the social relationship dimension, and the environmental dimension (WHO, 2012). The factors that affect quality of life are gender, age, education, occupation, marital status, income, relationships with others, reference standards, and physical health. In addition, spending too much time playing online games can interfere with daily life and cause changes in one's health status (Fahrizal et al., 2019).

Few studies have identified the effects of online game addiction on the quality of life of adolescents, although background exposure has shown that online game addiction can cause a decrease in the quality of life of adolescents. According to the preliminary study that we conducted, playing games excessively or addiction to games has a negative impact on adolescents' behavior. For example, they might sleep too late, which interferes with rest time, teenagers swear frequently when playing online games together, and teenagers rarely engage in physical activity when playing games for long periods of time. Aim of the study is to determine the relationship between online game addiction and the quality of life of adolescents during the COVID-19 pandemic.

Methods

This research used a correlational design with a cross-sectional approach. An incidental sampling strategy was employed when choosing the research sample, which involved picking anyone who happened to run into the researcher and met the requirements for inclusion in the sample (Polit & Beck, 2018). The research sample involved 96 respondents, a size determined as appropriate according to Lemeshow's formula. The research was carried out in several game centers in Yogyakarta and Bantul from February to April 2021. The Game Addiction Scale for Adolescents and the WHOQOL-BREF questionnaires created by WHOQOL Group as a development of the WHOQOL-100 questionnaire were employed (Lemmens et al., 2009; WHO, 2004). The questionnaire was translated into Indonesian and had previously undergone validity and reliability testing. The 22 statement items of the Game Addiction Scale for Adolescents were declared valid, with the r results > r table (0.361), and the reliability test obtained a Cronbach's alpha value of 0.907 (> 0.6) and was declared reliable (Fahrizal & Pratama, 2021). The Game Addiction Scale for Adolescents consists of several components: salience, tolerance, mood modification, relapse, withdrawal, conflict, and problems. Meanwhile, the WHOQOL-BREF consists of the physical, psychological, social, and environmental dimensions. Data on adolescent quality of life and online game addiction were acquired in the form of ratio data (numerical). Further-more, the data analysis was carried out using the Spearman test to determine the relationship between the two variables due to the data not being normally distributed (Dahlan, 2014).

This study was approved by the Committee on Ethics of the Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta (confirmation number: 050/EC-KEPK FKIKUMY/II/2021). The researchers acquired informed consent from all participants and kept their identities confidential using a par-ticipant code that only the research team could access.

Results

55 respondents (57.3%) were middle adolescents (15 – 17 years old). In terms of education, 66 respondents (66.7%) were in senior high school. Regarding the length of time spent playing online games, all respondents had played games for more than one year, and most played more than 3 hours in one day, as presented in Table 1.

Tables 2 and 3 provide a description of the quality of life scores in general and in detail according to each domain. The mean quality of life score was 52.45, and the minimum and maximum scores were 20.50 and 90.75, respectively. For the online game addiction score, the mean was 78.05, and the minimum and maximum scores were 46.00 and 110.00, respectively.

The results of the Spearman test are shown in Table 4. The significance was 0.000 ($p < 0.005$), and the r-value was -0.711, indicating a significant relationship between adolescents' addiction to online games and their quality of life. Furthermore, a correlation of -0.711 indicated a strong relationship, while a negative result indicated a unidirectional relationship. This means that the higher the online game addiction score, the lower the adolescent's quality of life.

Table 1. Description of Respondents' Characteristics

Characteristics	Frequency (n)	Percentage
Gender		
Male	96	100
Female	0	0.0
Age		
Early (14 years)	18	18.8
Middle (15 – 17 years)	55	57.3
Late (18 years)	23	24.0
Education Level		
Elementary School	0	0.0
Junior High School	30	33.3
Senior High School	66	66.7
Duration Spent Playing Online Game per Day		
> 3 hours	96	100
< 3 hours	0	0.0

Table 2. Description of Adolescents' Quality of Life Scores and Online Game Addiction Scores

Variable	Mean	Median	Mode	Std. Dev	N
Adolescent quality of life score	52.45	48.5	48.5	15.722	96
Online game addiction score	78.05	80.0	77.0	16.067	96

Table 3. Description of the Quality of Life Domain Score

Domain	Mean	Median	Mode	Std. Dev	N
Domain 1 (Physical)	18.78	17.0	16.0	4.27	96
Domain 2 (Psychological)	18.47	18.0	15.0	4.10	96
Domain 3 (Social)	9.48	9.0	8.0	2.43	96
Domain 4 (Environmental)	26.69	27.0	29.0	5.42	96

Table 4. The Relationship Between Online Game Addiction and Adolescents' Quality of Life

Spearman's Test	Variable of Game Addiction	Variable of Adolescent Quality of Life
Variable of Online Game Addiction	1.000	-.711(**)
	.	.000
Variable of Adolescents' Quality of Life	-.711 (**)	1.000
	.000	.

Discussion

This study showed that adolescents experience online game addiction. The COVID-19 pandemic has resulted in rising cases of video game addiction among students (Nugraha et al., 2021). The level of online game addiction among adolescents in Padang, Indonesia mainly corresponded to the moderate category with a mean score of 63.32 (Yanti et al., 2019). This level of addiction can occur because adolescents had particular motivations, such as socializing, escaping from problems, coping, and entertainment, during the pandemic (Novtrianti & Diantina, 2019). However, adolescents have the authority to control, regulate, and direct their behaviors and impulses, which means that adolescents who have good control of themselves have a lower level of addiction (Masyita, 2016).

The results revealed that the adolescents' average quality of life score was 52.45 (SD: 15.722). Adolescents with online game addictions often miss various parts of life because they are addicted to gaming. As a result, they become less physically active, sleep less, and often eat late (Männikkö et al., 2015). An increased likelihood of musculoskeletal symptoms was linked to weekday online gaming for more than five hours a day in combination with escape motives (OR 2.494, 95% CI 1.598 – 3.892) (Hellström et al., 2015). Nofianti (2018) showed that adolescents who played games online with high intensity had poor sleep quality, an issue affecting 101 respondents (85.1%). Another study showed that children who played online games for longer than six hours had the worst sleep quality (75%) (Ahmed et al., 2022; Jeong et al., 2021). In addition, being addicted to online games also disturbs adolescents' sleeping patterns. This was proven by Gurusinga (2020), whose study showed that 53.6% of adolescents addicted to online games had interrupted their sleeping patterns. Middle adolescents are likely to have a lower quality of life (34.37%) than early adolescents, since middle and late adolescents experience more pressure, such as academic, social, and emotional pressures (Heng et al., 2020).

This study indicated a significant relationship between online game addiction and adolescents' quality of life (p = 0.000 and r = -0.711). Online game addiction has detrimental effects on one's mental, social, and economical well-being (Novrialdy, 2019). Adolescents with internet gaming disorders have a much lower health-related quality of life than those who do not (Wartberg et al., 2017). These issues occur due to the negative impacts generated by excessive online game playing, which can affect physical, psychological, and social capabilities. Participants with gaming addictions reported significantly worse subjective sleep quality, greater sleep disturbance, shorter sleep duration, and greater daytime dysfunction compared to those who were not addicted to gaming (Zaman et al., 2022). The motivations of online gamers were categorized as "recreational," "escapers," and "competitive." "Escapers" players were at a greater risk of acquiring pathological disorders, showing higher internet gaming disorder scores than the other groups; they also had lower psychological scores and were more neurotic and introverted than the other groups (Larrieu et al., 2022).

Wartberg et al. (2017) showed that adolescents are likely to make more new friends through online games. As a result, they have only a few friends in reality, which leads them to have little social support. This can later cause a decrease in adolescents' quality of life (Gomes et al., 2020). Furthermore, playing online games with high intensity causes adolescents to lose interest in hobbies and other activities (Ariatama et al., 2019). Adolescents with excessive online gaming habits engage in fewer activities than those who do not (Sugaya et al., 2019). Family relationships are also negatively affected by internet gaming disorder (Purwaningsih & Nurmala, 2021).

Playing online games cause a decline in their physical and psychological health and social relationships, resulting in a decrease in the adolescents' quality of life (Haryono & Kurniasari, 2018). Internet gaming disorder has been substantially associated with the formation of concentration issues, loneliness, and sadness, all of which are accompanied by strong relationship strength (Montag et al., 2021). Negative emotional coping is strongly linked to online gaming disorder (Liao et al., 2020). There are statistically significant positive correlations between IGD-20 questionnaire scores and the scores for attention deficit (r = 0.234; p = .001), hyperactivity (r = 0.235; p = .001), depression (r = 0.166; p = .003), and anxiety (r = 0.1268; p = .002) disorders (Almutairi et al., 2023).

For a male, completing a challenge or mission in a video game generates a sense of pride and satisfaction. Men are 2.9 times more likely than women to fall into the category of addicted gamers (Wittek et al., 2016). One of the characteristics of middle adolescents is trying to seek new friends (Batubara, 2010). Aside from being a form of entertainment, online games can also be used to make new friends and interact with other adolescents.

The sample did not represent different regions with different sociocultural and economic characteristics and the researchers have not considered the psychological condition of the respondents, which is a limitation of this study, and the sampling technique used was also a limitation because accidental sampling techniques can be biased and unrepresentative.

Conclusion

Adolescents' quality of life declines as their online game addiction increases. There needs to be control from adolescents and their families in the time spent playing online games, so they do not become addicted. The role of nurses is needed both in the community and in educational institutions to carry out health promotion and prevent online game addiction in children and adolescents.

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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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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"

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.

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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.

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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

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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)

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

*table footnotes (if necessary)

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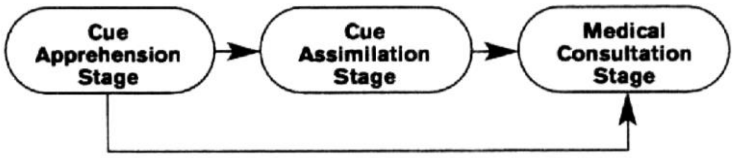

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Figure 1. The Process of Cardiac Sensitivity Cues (Capital Letters in the Beginning of the Words, 11pt)

AUTHOR GUIDELINES: CASE REPORT

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

Abstract (10-pt, bold, italics)

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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.

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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?

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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.

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AUTHOR GUIDELINES: CASE REPORT

The information about the author(s) such as full name (without academic title), affiliates, and address are wrote on the separate file (tittle 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.

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, Case Illustration, 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/

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.

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.

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Conclusion

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*table footnotes (if necessary)

Here is an example of an image

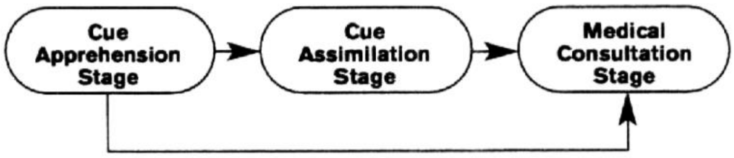

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Figure 1. The Process of Cardiac Sensitivity Cues (Capital Letters in the Beginning of the Words, 11pt)

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