Health Promoting Behaviors Among Adolescents Living in Child Welfare Institutions In East Java, Indonesia: A Structural Equation Model

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Health Promoting Behaviors Among Adolescents Living in Child Welfare Institutions In East Java, Indonesia: A Structural Equation Model

A Dissertation
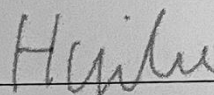**Submitted to the Department of Nursing**
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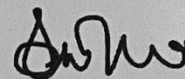**Aloysia Ispriantari**

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This certifies that the dissertation of Aloysia Ispriantari is approved.

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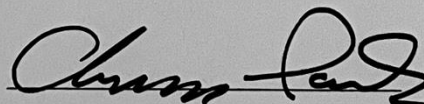_____
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ABSTRACT

Health Promoting Behaviors Among Adolescents Living
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Adolescents in child welfare institutions often face significant health vulnerabilities that hinder their physical, social, and mental development compared to those in family settings. These adolescents encounter obstacles such as inadequate facilities, limited caregiver support, and restricted access to health services, leading to challenges in adopting Health Promoting Behaviors (HPB).

The objectives of this study are to identify factors affecting HPB among adolescents living in child welfare institutions in East Java, Indonesia, and to develop a structural equation model to explain the causal relationships among these factors.

This correlational study used multivariate structural analysis and was conducted in Malang City, East Java, Indonesia, from January 14, 2024, to February 3, 2024. Convenience sampling was used. Data collection was conducted online with the assistance of six research assistants. The variables studied were HPB, perceived barriers to action, perceived self-efficacy, social support, health literacy, and self-esteem. Statistical analyses were performed using IBM SPSS Statistics 26.0 and IBM AMOS 26.0. Ethical approval (IRB) was obtained from Indonesia, and written consent was provided by the directors of the child welfare institutions. Additionally, all participants gave their consent before data collection.

A total of 276 adolescents living in 17 child welfare institutions in East Java, Indonesia, participated in this study. Perceived self-efficacy and social support had a significant positive correlation with HPB, explaining 47.9% of HPB. Health literacy, self-esteem, and perceived self-efficacy had a significant negative correlation with perceived barriers to action, explaining 18.8% of these barriers. Self-esteem and social support had a significant positive correlation with perceived self-efficacy, explaining 32.8% of it. Only self-esteem had a significant positive correlation with social support, explaining 8.6% of it.

For HPB, perceived self-efficacy had a direct effect. Social support had both direct and indirect effects on HPB, while self-esteem only had indirect effects on HPB. Self-esteem had both direct and indirect effects on perceived barriers to action. Health literacy and perceived self-efficacy had direct

effects on perceived barriers to action, while social support had only an indirect effect. Self-esteem had both direct and indirect effects on perceived self-efficacy, whereas social support had only a direct effect on perceived self-efficacy. For social support, only self-esteem had a direct effect. Nursing interventions to improve and maintain HPB among adolescents in child welfare institutions in Indonesia should not focus solely on school settings. They should also be provided through child welfare institutions, benefiting not only adolescents but also caregivers and friends living in these institutions.

I. INTRODUCTION

1.1   Background

Adolescents living in child welfare institutions (referred to as orphanages or childcare institutions) are more susceptible to health problems than those living with their families (Bhatt et al., 2020; Mohammadzadeh et al., 2018). They are more likely to experience impaired physical, social, sexual, and mental development as well as pessimistic expectations for the future, which can be detrimental to their overall health and well-being (Öztürk & Ekinci, 2018).

The World Health Organization (WHO) has emphasized the importance of health promoting behaviors (HPB) as a key strategy for maintaining lifelong health status and quality of life (Bakouei et al., 2018). Good HPB during adolescence can reduce the risk of chronic diseases and contribute to better academic performance, mental health, and positive relationships (Anderson & Durstine, 2019; Kaya & Erdem, 2021; Mayne et al., 2020; Wu et al., 2017). Thus, adopting good HPB is an investment in the present and future health status and quality of life of adolescents.

Adolescents living in child welfare institutions face limitations when adopting a good HPB. For example, inadequate facilities and insufficient caregiver support to address their physical and psychological needs can lead to poor decision-making skills and low self-esteem, ultimately negatively impacting HPB (Kholifah, 2022). Additionally, limited knowledge and access to health services resulting from a lack of government registration and national health insurance coverage can pose barriers to adopting HPB (Moffa et al., 2019).

In Indonesia, the presence of adolescents in child welfare institutions is primarily attributed to economic factors affecting their parents. Moreover, it is generally assumed in Indonesia that these institutions provide appropriate protection, food, and education for all children and adolescents living in these institutions (Jafar et al., 2020). However, because most child welfare institutions in Indonesia are privately owned and lack governmental support, they are unable to provide the national standard of care for children within their premises (Roja, 2020). As a result, adolescents living in these institutions often face health risk problems, such as smoking, low physical activity, poor sleep, low resilience, low well-being, and increased delinquency risk (Kassaming & Ibrahim, 2018; Mansoer et al., 2019; Rahim, 2021; Rimbawan & Ratep, 2016).

The Ministry of Social Affairs of the Republic of Indonesia recorded 4,864 child welfare institutions in 2019 and 4,863 in 2020, but it decreased to 3,914 in 2021. Still, the number of children and adolescents living there is increasing, starting at 106,406 children and adolescents in 2019, then 115,827 children and adolescents in 2020, and 191,696 children and adolescents in 2021 (Alkayyis et al., 2021; Ministry of Social Affairs of the Republic of Indonesia, 2021; Setiawan, 2021). Meanwhile, the Child Welfare Institutions Forum provided data on the number of child welfare institutions in 2021, which was 6,320 institutions (Susilowati, 2022). This shows that many child welfare institutions still have yet to be officially recorded by the Ministry of Social Affairs, and there may still be many children and adolescents living in these institutions.

East Java Province is also noted as the province with the most child welfare institutions in Indonesia, with 1,605 institutions in 2020 (Budianto, 2022). In Malang City, the second largest city in East Java, there were 39 child welfare institutions in 2018, which dramatically increased to 62 institutions in 2022, with a total of 1,922 children and adolescents living in child welfare institutions (Communication and Public Information Office of Malang City, 2018; Widianto, 2021). Most of these institutions are private and owned by religious organizations. Based on accreditation level, 8 (10.7%) institutions had level A, 19 (25.3%) institutions had level B, 9 (12%) institutions had level C, and 39 (52%) had not yet received an accreditation rating.

The limited number of studies on the factors affecting HPB among adolescents living in child welfare institutions in Indonesia makes this study necessary for evaluating the current situation and future needs. Furthermore, understanding the HPB of these adolescents is essential for motivating them to improve their health behaviors. Finally, it will provide a groundwork for nurses and other health professionals to develop interventions to enhance the knowledge, skills, health status, and well-being of adolescents living in child welfare institutions in Indonesia to improve their health during the transition to adulthood.

1.2   Objectives

1) To identify factors affecting HPB among adolescents living in child welfare institutions in East Java, Indonesia.

2) To develop a structural equation model to explain the causal relation among the factors affecting HPB among adolescents living in child welfare institutions in East Java, Indonesia.

1.3 Definition of Terms

1.3.1 Adolescents Living in Child Welfare Institutions

Child welfare institutions are non-profit social institutions that accommodate, educate, and care for orphans and neglected children (Suhendar et al., 2020).

In this study, adolescents living in child welfare institutions are defined as individuals aged 13-18 years who have stayed in child welfare institutions for a minimum of six months.

1.3.2 Health Promoting Behaviors

HPB refers to the actions and choices that individuals make to improve their overall health and prevent the occurrence of diseases (Pender et al., 2011).

In this study, HPB is actions taken by adolescents to improve and maintain their health in a child welfare institution setting and measured by the scores using the Adolescent Lifestyle Profile-Revised 2 (ALP-R2), which consisted of seven subdomains: health responsibility, physical activity, nutrition, positive life perspective, interpersonal relationship, stress management, and spiritual health (Hendricks et al., 2006).

1.3.3 Factors Affecting Health Promoting Behaviors

1.3.3.1 Health Literacy

Health literacy refers to a person's capability to seek out, comprehend, evaluate, and utilize information to make effective decisions regarding their health (Bröder et al., 2017).

In this study, health literacy is adolescents' ability to seek, understand, evaluate, and use health information to make informed decisions about their health when living in child welfare institutions and identified with the scores using the Health Literacy Assessment Scale for Adolescents (HAS-A) (Manganello et al., 2015).

1.3.3.2 Self-Esteem

Self-esteem refers to a person's impression of their own value, which encompasses their abilities, qualities, and significance as a whole (Pinquart & Gerke, 2019).

In this study, self-esteem is adolescents' self-perception and assessment of their personal worth and abilities when living in living in child welfare institutions and identified with the scores using the Rosenberg Self-Esteem Scale (Rosenberg, 2015), which has already been adapted to the Indonesian language by Alwi and Ahmad (2022).

1.3.3.3 Perceived Barriers to Action

Perceived barriers to action refers to a person's perception of the difficulties and barriers that may hinder or impede the performance of health behaviors (Sallis et al., 2015).

In this study, perceived barriers to action are adolescents' perceptions of the barriers or obstacles that prevent them from performing HPB when living in child welfare institutions and identified using the scores on The Barriers to Health Promoting Activities scale (Becker et al., 1991).

1.3.3.4 Perceived Self-Efficacy

Perceived self-efficacy refers to a person's perspective and confidence in their capacity to accomplish an action or behavior (Sheeran et al., 2016).

In this study, perceived self-efficacy is adolescents' belief in their own ability to perform and maintain HPB when living in child welfare institutions and identified using the Self-Rated Abilities for Health and Practices Scale–Adolescent Version (SRAHP-A) (Chilton et al., 2018).

1.3.3.5 Social Support

Social support refers to the provision of assistance, comfort, and psychological and material resources by an individual's network, which may include family, friends, peers, neighbors, religious institutions, and support groups (Camara et al., 2017).

In this study, social support is the emotional, instrumental, appraisal, and informational support adolescents receive from caregivers, peers, and friends living in child welfare institutions that assist them in performing HPB and identified with the scores using the Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB) (Menon & Demaray, 2013).

1.4   Hypotheses

The hypotheses in this study are:

1.4.1   Three hypotheses with HPB as the endogenous variables

H1. Perceived barriers to action has a negative relationship with HPB

H2. Perceived self-efficacy has a positive relationship with HPB

H3. Social support has a positive relationship with HPB

1.4.2 Three hypotheses with perceived barriers to action as the endogenous variables

H4. Health literacy has a negative relationship with perceived barriers to action

H5. Self-esteem has a negative relationship with perceived barriers to action

H6. Perceived self-efficacy has a negative relationship with perceived barriers to action

1.4.3 Three hypotheses with perceived self-efficacy as the endogenous variables

H7. Health literacy has a positive relationship with perceived self-efficacy

H8. Self-esteem has a positive relationship with perceived self-efficacy

H9. Social support has a positive relationship with perceived self-efficacy

1.4.4 Two hypotheses with social support as the endogenous variables

H10. Health literacy has a positive relationship with social support

H11. Self-esteem has a positive relationship with social support

II. LITERATURE REVIEW

A literature review was conducted to identify relevant assessed HPB among adolescents living in child welfare institutions. This literature review was under section as follows: (1) child welfare institutions in Indonesia, (2) health status of adolescents living in child welfare institutions, (3) HPB, (4) factors affecting HPB among adolescents: (a) individual characteristic and experiences: health literacy and self-esteem, behavior-specific cognitions and affect: perceived barriers to action, perceived self-efficacy, and social support.

2.1 Child Welfare Institutions in Indonesia

In Indonesia, the term "child welfare institutions" (*Lembaga Kesejahteraan Sosial Anak*) officially replaced the word "childcare institutions" (*Panti Asuhan*) in 2011. Child welfare institutions are social welfare organizations that provide childcare services, whether owned by the government or the community (Ministry of Social Affairs of the Republic of Indonesia, 2011).

Children and adolescents living in child welfare institutions in Indonesia are often there due to abandonment, parental loss, or economic hardships, with economic factors accounting for 90% of the cases (Rienneke & Setianingrum, 2018). In 2021, it was estimated that there were 191,696 children and adolescents living in 3,914 child welfare institutions (Setiawan, 2021). However, it is important to note that this number is likely higher due to the Ministry of Social Affairs of the Republic of Indonesia's underreporting (Alkayyis et al., 2021).

Indonesia, a country characterized by religious multi-pluralism and high religiosity, recognizes the importance of religion in its society (Gallup International, 2017). The Indonesian government officially acknowledges six religions: Islam, Christianity, Catholicism, Buddhism, Hinduism, and Confucianism. It is mandatory for all Indonesian residents to include their religious identity in their national identity card (Marshall, 2018). However, it should be noted that the government also provides legal protection for other religions, such as Judaism, Sikhism, and traditional beliefs, while atheism is prohibited in Indonesia (Ichsan & Prasetyoningsih, 2019).

Most child welfare institutions in Indonesia operate under the auspices of religious organizations or local communities. These institutions reflect people's desire to improve the well-being of children based on their religious beliefs, as they anticipate receiving rewards from God

(*pahala*) for aiding orphans and homeless children (McLaren & Qonita, 2019). Religion plays a vital role in these child welfare institutions by providing spiritual guidance, moral teachings, and a sense of belonging to the children residing there (Afriani et al., 2021).

However, due to inadequate administrative management, many of these institutions fail to report to Social Affairs Offices and, therefore, cannot receive government support. Additionally, they face challenges in meeting the standard care requirements for children, primarily due to the disparity between the number of foster children they serve and the available funding and human resources (Sutinah, 2018). Studies have indicated that numerous child welfare institutions in Indonesia fail to meet national standards, and the roles of social workers overseeing the welfare of children in these institutions are not well-defined (Susila et al., 2023; Susilowati et al., 2017).

Specifically, in Malang City, the twelfth largest city in Indonesia and the second largest in the East Java province, there are 62 registered child welfare institutions under the Social Affairs Office, with approximately 3,143 children living in these institutions as of 2021. However, like many regions in Indonesia, the actual number of child welfare institutions and the number of children living there could be higher since many institutions have not reported to the Social Affairs Office of Malang City. Furthermore, many children and adolescents living in child welfare institutions in Malang City still have families living in small towns around Malang City and are from the lower economic class. As a result, these families rely on child welfare institutions in Malang City to potentially provide their children with education and a better life (Putri, 2017).

2.2 Health Status of Adolescents Living in Child Welfare Institutions

Adolescents are individuals between the ages of 13 and 18 who are in transition from childhood to adulthood. During this transition, they experience significant physical, emotional, and social changes (Sawyer et al., 2018).

Living in child welfare institutions has both positive and negative effects on the lives of adolescents in Indonesia. On the positive side, these institutions provide shelter and food and offer an education compared to living with their families (Alkayyis et al., 2021). Additionally, the structured daily schedules in these institutions help instill discipline among adolescents (Abidin, 2019). Moreover, as many child welfare institutions have religious affiliations, adolescents have increased opportunities to learn and practice their religion (Gafur, 2020).

However, there are also challenges that adolescents face while living in child welfare institutions. Separation from their families, along with the limitations of these institutions in meeting the children's needs, creates various obstacles. Health problems are prevalent among adolescents living in child welfare institutions in Indonesia, such as physical health issues (scabies, head lice infestation, opportunistic intestinal protozoans' infection, hepatitis B infection), and psychosocial health issues (low resilience and well-being, and increased risk of delinquency) (Fitri et al., 2020; Kambuno et al., 2021; Mansoer et al., 2019; Maryanti & Lestari, 2020; Putri et al., 2019). Furthermore, the shortage of caregivers in child welfare institutions often leads to adolescents feeling neglected and disconnected from parental figures (Katkar et al., 2021).

Studies also indicate that many institutions do not allow opportunities for adolescents to visit their families, further intensifying their sense of alienation (Westerlaken, 2021). Moreover, the lack of registration in many institutions creates barriers to accessing proper healthcare, including services from public health centers and national health insurance coverage for children and adolescents living in these institutions (Putri et al., 2022). Additionally, other studies have also highlighted the prevalence of violence and bullying within institutions (Disemadi & Wardhana, 2020; Yandri et al., 2022), suggesting inadequate protection for residents of child welfare institutions in Indonesia.

2.3 Health Promoting Behaviors (HPB)

HPB refers to the actions and choices individuals make to improve their overall health and prevent the occurrence of diseases (Sakraida & Wilson, 2021). The development of good HPB relies on behavioral adaptation during the early years, with adolescence being a critical period for adopting these behaviors (Eo & Kim, 2020).

However, the rapid changes experienced during the transition from childhood to adulthood pose numerous challenges and developmental crises for adolescents, leading to health-risk behaviors such as unhealthy eating habits, smoking, reduced physical activity, inadequate sleep, and drinking. These behaviors can adversely affect their health status and quality of life in adulthood (Pop et al., 2021). To prevent health-risk behaviors, it is crucial to identify and address them promptly (Pop et al., 2021). Nonetheless, several studies have indicated that the level of HPB among adolescents remains at moderate levels (Öztürk & Ekinci, 2018; Rice & Klein, 2019), and there are limited studies on HPB among adolescents living in child welfare institutions.

2.4 Factors Affecting Health Promoting Behaviors Among Adolescents

This section discusses the factors affecting the health-promoting behaviors of adolescents living in child welfare institutions based on the HPM framework. These factors were analyzed to develop the structural equation model tested in this study.

2.4.1 Individual Characteristics and Experiences

The individual characteristics and experiences domain of the HPM encompasses two factors: health literacy and self-esteem.

2.4.1.1 Health Literacy

Health literacy is a person's capability to seek out, comprehend, evaluate, and utilize information to make effective decisions regarding their health (Bröder et al., 2017). There are four types of health literacy: interactive health literacy, functional health literacy, critical health literacy, and media health literacy (Fleary et al., 2018; Liu et al., 2020). Interactive health literacy relates to processing and comprehending health-related information, while functional health literacy involves basic reading and writing skills. Critical health literacy entails the ability to think critically and make informed health decisions. Finally, media health literacy involves obtaining information from the media and using it to address health issues (Fleary et al., 2018; Liu et al., 2020).

During adolescence, individuals learn to understand health-related information and make independent decisions. Suppose adolescents cannot make the right decisions and fully comprehend health information. In that case, they are at a high risk of engaging in unhealthy behaviors, leading to a decline in their overall health status (Fleary et al., 2018). Adolescents with higher health literacy are more likely to seek information related to their health and strive to improve their well-being. They may seek information from friends, teachers, parents or guardians, healthcare workers, or the media, including the internet. Studies have shown that most adolescents have internet access to seek health information (Ohara-Borowski, 2018). However, problems can arise because adolescents tend to trust all the information they receive from the media and may be reluctant to verify the accuracy of information with competent professionals like healthcare providers (Ohara-Borowski, 2018).

A study conducted in Turkey on students from grades 6 to 8 showed that more than half (64%) of the adolescents had a moderate level of health literacy (Ozturk & Ayaz-Alkaya, 2020). In comparison, 18.4% had a low level of health literacy, and only 17.7% had a high level of health

literacy. Adolescents who showed high levels of health literacy tended to come from areas with high-income levels and parents who had undergraduate or graduate educational backgrounds (Ozturk & Ayaz-Alkaya, 2020). Another study on 7th to 8th graders in Lithuania found that most adolescents (70.5%) had a moderate level of health literacy, 12.1% had a low level of health literacy, and only 17.4% had a high level of health literacy. This study also indicated that adolescents' health literacy level is closely related to socioeconomic status (Sukys et al., 2019). However, a study on adolescents in high schools in the USA by Park et al. (2017) found that 45% of adolescents had a marginal level of health literacy, 33% had an insufficient level, and only 23% had an adequate level. Despite a high interest in health information, many adolescents still struggle to understand health information presented in writing (Park et al., 2017).

In Surabaya, Indonesia, a study has revealed alarming results regarding health literacy in adolescents (Prihanto et al., 2021). It was revealed that only 26% of the adolescents had an average level of functional health literacy, while 39.7% had a marginal level, and 34.3% had a limited level. However, 64.3% had a sufficient level of comprehensive health literacy, 5.3% had inadequate health literacy, and 30.4% had a problematic level. It was hypothesized that this is because the reading literacy level of Indonesian students is low, below the average for OECD (Organization for Economic Co-operation and Development) countries (Prihanto et al., 2021).

Jeong and Kim (2016) identified that health literacy is related to perceived barriers to action. A study of 1,000 adults showed that 61% of participants had inadequate health literacy and reported many attempts to search for health information, facing barriers such as expensive books, not knowing how to use the internet, lack of transportation, spending too much time, and needing to learn how to get information. However, there were limited studies on adolescents.

Health literacy is also related to perceived self-efficacy. People with high health literacy try to achieve goals despite many barriers. A study on adolescents aged 15-18 using 756 respondents in two different socioeconomic school districts in Turkey examined health literacy, self-efficacy, and Internet use in HPB (Ceylan et al., 2022). The results showed that adolescents' health literacy was inadequate (56.1%), sufficient (30.1%), and excellent (13.8%). More than half of adolescents in low socioeconomic areas had limited health literacy (60.9%), and 57.4% had good self-efficacy. There was a moderate positive relationship between health literacy and self-efficacy, indicating that higher levels of health literacy increase self-efficacy to cope with preventing and overcoming chronic diseases in adulthood (Ceylan et al., 2022). Additionally, health literacy interventions that

only focus on providing information are less successful in achieving maximum HPB levels than those that also focus on building self-efficacy (Prihanto et al., 2021).

Many studies have found that individuals with high health literacy seek and receive social support from their networks, such as family, friends, and health professionals. Nevertheless, research on adolescents is still limited. A study on pregnant adolescents in low-income areas in Brazil, with 41 adolescents averaging 17 years old, identified health literacy levels. Results showed that almost all adolescents (95.1%) had inadequate health literacy. Those with inadequate health literacy reported less or no social support from their parents (França et al., 2020).

Overall, adolescents' health literacy is generally at a moderate level. The findings also indicate that health literacy in adolescents in Indonesia is generally still at a low level (Prihanto et al., 2021). However, a significant gap should be noted, as no studies have specifically examined health literacy in adolescents living in child welfare institutions. Nonetheless, socioeconomic factors and family environment significantly influence adolescents' health literacy (Ozturk & Ayaz-Alkaya, 2020; Sukys et al., 2019), which may impact variations in health literacy outcomes among adolescents living in child welfare institutions. Hence, the hypotheses for this study are that health literacy has a negative relationship with perceived barriers to action, but a positive relationship with perceived self-efficacy and social support.

2.4.1.2 Self-Esteem

Self-esteem is a person's impression of their own value, which encompasses their abilities, qualities, and significance as a whole (Pinquart & Gerke, 2019). Several factors influence self-esteem, including past experiences, social comparisons, and how others have treated them in the past (Deuling & Burns, 2017; Pinquart & Gerke, 2019).

Many studies have identified the self-esteem of adolescents living in child welfare institutions. A study on 287 adolescents aged 12-18 years living in 50 private child welfare institutions in Malaysia found that the mean Rosenberg Self Esteem Scale score was 26.69, indicating low self-esteem (score <30), and more than 70% of adolescents experienced low self-esteem (Mohammadzadeh et al., 2018). A study in 30 child welfare institutions in Padang City, Indonesia, found that 52.3% experienced low self-esteem (Febristi et al., 2020). Furthermore, a study in one of the child welfare institutions in Malang City, Indonesia, found that more than half of adolescents (77%) experienced moderate self-esteem (Lete et al., 2019).

Some studies have indicated that self-esteem is correlated with perceived barriers to action (Avci et al., 2014; Prieto, 2015). However, there have been limited studies on adolescents. Nonetheless, a study on graduate students discovered that individuals with high self-esteem reported lower perceived barriers to action within the campus environment (Prieto, 2015). Similarly, a study involving female graduate students found a moderate level of self-esteem among participants, and self-esteem was associated with perceived barriers to action regarding breast self-examination (Avci et al., 2014).

Individuals with positive self-esteem are more likely to possess the confidence and ability to deal effectively with problems (Mailey et al., 2016). Conversely, individuals with low self-esteem often experience reduced levels of self-efficacy due to a fear of being unable to solve problems (Flynn & Chow, 2017). While there are limited studies on adolescents, a study involving college students discovered that self-efficacy partially mediated the association between self-esteem and the likelihood of developing eating problems (Saunders et al., 2016). A study focusing on English as a Foreign Language students revealed a relationship between self-esteem and students' self-efficacy, with self-esteem playing a role in enhancing academic improvement (Asakereh & Yousofi, 2018). With self-esteem as a contributing factor, perceived self-efficacy can be influenced.

Moreover, adolescents with high self-esteem tend to form more secure attachments with friends, as they view their relationships with friends as reliable and trustworthy (Gorrese, 2016). Higher levels of self-esteem in adolescents have been linked to better social adaptation and fewer difficulties in social interactions (Shi et al., 2017). Conversely, a study by Xin et al. (2019) indicated that adolescents with low self-esteem tend to avoid social activities, experience higher levels of stress, and perceive less social support. Another study on senior high school students found that high self-esteem was associated with the perception of social support from both friends and family, contributing to a sense of hope (Hu et al., 2022).

In summary, many studies have investigated self-esteem in adolescents, including adolescents living in child welfare institutions. However, there are still limitations in identifying other factors related to self-esteem. The gap also occurs due to the limited studies on adolescents in child welfare institutions, considering that their self-esteem is lower than those living with families, which may impact their HPB. Hence, the hypotheses for this study are that self-esteem has a negative relationship with perceived barriers to action and a positive relationship with perceived self-efficacy and social support.

2.4.2 Behavior-Specific Cognitions and Affect

The "behavior-specific cognitions and affect" domain of HPM encompasses three factors: perceived barriers to action, perceived self-efficacy, and social support.

2.4.2.1 Perceived Barriers to Action

Perceived barriers to action is a person's perception of the difficulties and barriers that may hinder or impede the performance of health behaviors (Sallis et al., 2015). These perceived barriers include factors such as limited time and equipment, competing priorities, societal norms, and fear of failure (Jose et al., 2021).

A recent systematic review of barriers to physical activity identified cognitive (lack of time and motivation), emotional, psychological, environmental, and sociocultural factors (lack of social support) as barriers to physical activity in high school students. It also identified a lack of available space as an environmental factor and a lack of financial support as a demographic factor in their physical activity barrier (Ferreira Silva et al., 2022).

One of the indicators of HPB in nutrition is sugar-sweetened beverage consumption. It increases the risk of obesity and cardiovascular and metabolic diseases (Bleich & Vercammen, 2018). A study in Taiwanese adolescents aged 13-16 stated that perceived barriers to drinking sugar-sweetened beverages affect this consumption (Wang & Chen, 2022). Increased perceived barriers to drinking sugar-sweetened beverages reduce sugar-sweetened beverage consumption (Wang & Chen, 2022).

Another study conducted in Australia on adolescents and young adults found that perceived barriers to action became a predictor in predicting help-seeking intentions for mental health issues (O'connor et al., 2014). A study of 400 female high school students in Iran found that perceived barriers to action was the strongest and most important predictor of oral and dental health behaviors ($p<0.001$) (Rahmati-Najarkolaei et al., 2016). Additionally, this study found that their health behaviors were only moderate.

In summary, several studies have shown a significant relationship between perceived barriers to action and HPB in adolescents, even though there is limited research on adolescents living in child welfare institutions. Hence, this study hypothesizes that perceived barriers to action have a negative relationship with HPB.

2.4.2.2 Perceived Self-Efficacy

Perceived self-efficacy is a person's perspective and confidence in their capacity to accomplish an action or behavior (Sheeran et al., 2016). The presence of perceived self-efficacy can instill confidence in individuals, enabling them to overcome challenges and achieve their goals. On the other hand, individuals with low self-efficacy may experience uncertainty and doubt in their abilities, making them more prone to giving up or avoiding challenges (Green et al., 2020).

Perceived self-efficacy plays a crucial role in determining HPB. A study on sugar-sweetened beverage consumption in Taiwan was conducted on junior high school students (Wang & Chen, 2022). The results of this study showed that perceived self-efficacy in refusing sugar-sweetened beverages was the strongest predictor of sugary drink consumption, where high self-efficacy significantly reduced sugar-sweetened beverage consumption.

Another study conducted in Iran on 500 high school students about dietary behavior showed that self-efficacy has a direct relationship with healthy eating significantly in both male and female students (Salahshoori et al., 2014). Another study on high school students also showed that self-efficacy positively affects adolescent physical activity in China (Ren et al., 2020). Adolescents with good exercise self-efficacy participate more in physical activity. When overcoming difficulties in physical activity, adolescents with high self-efficacy manage their emotions well and make efforts to overcome their difficulties, increasing physical activity levels. In contrast, adolescents with low self-efficacy tend to show negative emotions such as anxiety, which lowers physical activity levels (Ren et al., 2020).

Perceived self-efficacy can also directly affect perceived barriers to action. A prospective cohort observational study in the USA on students observed changes in physical activity from grade 5 to grade 11 (Dishman et al., 2019). This study found that over time, there was a decline in physical activity in students, positively related to a decrease in self-efficacy and negatively related to a decline in perceived barriers. An interaction effect was found between changes in self-efficacy and changes in perceived barriers. After adjusting for race and gender, it was found that changes in perceived self-efficacy and perceived barriers influenced the decline in physical activity. The decline in physical activity occurred more in students with decreased perceived self-efficacy and increased perceived barriers than in students with higher self-efficacy and lower perceived barriers (Dishman et al., 2019).

Many studies have identified adolescents' perceived self-efficacy and its relationship with HPB and perceived barriers to action (Dishman et al., 2019; Ren et al., 2020; Salahshoori et al., 2014; Wang & Chen, 2022). However, there are limited studies on the population of adolescents living in child welfare institutions. Some studies stated that adolescents living in child welfare institutions have low perceived self-efficacy (Nabunya et al., 2022). However, studies on the relationship between the perceived self-efficacy of adolescents living in child welfare institutions with HPB and perceived barriers to action are also limited. Hence, in this study, the hypotheses are that perceived self-efficacy has a positive relationship with HPB and a negative relationship with perceived barriers to action.

2.4.2.3 Social Support

Social support is the provision of assistance, comfort, and psychological and material resources by an individual's network, which may include family, friends, peers, neighbors, religious institutions, and support groups (Camara et al., 2017). Various types of social support exist, such as material/instrumental support (providing tangible aid or services), emotional support (empathy, trust, and understanding), informational support (guidance and advice), and appraisal support (encouragement and confidence) (Gariepy et al., 2016).

For adolescents in child welfare institutions, caregivers within these institutions are an important source of social support (Katkar et al., 2021). Due to the separation from their families, these adolescents lack the parental figures crucial for their development during adolescence (Bettmann et al., 2015). Caregivers serve as substitute parental figures who can offer instrumental and informational support and serve as role models for adopting HPB (Khalid et al., 2023).

Friends within child welfare institutions also play a significant role in providing social support. Adolescents in these institutions develop friendships and a sense of belonging (Salifu Yendork & Somhlaba, 2015). Friends offer emotional support, appraisal, and encouragement for engaging in HPB (Caserta et al., 2017).

Support from peers outside the child welfare institutions is also important (Taukeni, 2015). These peers can be classmates at school, individuals from the adolescents' previous living environment before entering the institution, or members of the broader community, such as a religious community (Gentz et al., 2018; Tratner et al., 2020). Emotional support and connections

with the outside world contribute to HPB among adolescents living in child welfare institutions (Gentz et al., 2018).

Some studies have demonstrated the correlation between social support, perceived self-efficacy, and HPB. A Chinese study of adolescents aged 12-17 years attending junior and senior high schools examined social support, self-efficacy, and physical activity (Ren et al., 2020). Results showed that social support and self-efficacy were significant predictors of physical activity, accounting for 26.7% and 23.30% of the variance, respectively. Additionally, self-efficacy mediated the relationship between social support and physical activity with a mediating effect of 38.46%. Social support from parents and peers is essential in physical activity; for example, parents provide equipment, while friends provide support by inviting and doing physical activities together. Social support, especially from peers, will also increase a sense of belonging that can increase self-efficacy, further increasing physical activity (Ren et al., 2020).

However, there are limited studies on social support in adolescents living in child welfare institutions. Different sources of social support from adolescents living with family may vary the level of social support obtained by these adolescents, affecting their HPB. Hence, this study hypothesizes that social support has a positive relationship with HPB and perceived self-efficacy.

III. CONCEPTUAL FRAMEWORK

3.1 Conceptual Framework for Study

Pender's Health Promotion Model (HPM) serves as the theoretical framework for this study, as shown in Figure 1 (Pender, 1982). Originally released in 1982, the model underwent an update in 1992 (Sakraida & Wilson, 2021). In the revised HPM, there are three domains, which include individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes (Figure 1).

Individual characteristics and experiences, including prior behavior and personal factors, significantly influence subsequent actions, with their impact varying based on the desired behavior being considered. Behavior-specific cognitions and affect are highly motivational and form a crucial foundation that can be altered through interventions, making it essential to measure them to evaluate intervention effectiveness in inducing change. This domain consists of perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences-family, peers, providers (norms, support, models), and situational influences (options, demand characteristics, aesthetics), commitment to a plan of action, immediate competing demands and preferences (Sakraida & Wilson, 2021).

HPB, as described in the HPM, serves as the endpoint aimed at achieving positive health outcomes. Integrating these behaviors into a healthy lifestyle can enhance health, functional abilities, and overall quality of life during various developmental stages. While studies primarily aim to test the predictability of HPM constructs rather than using it as a theoretical basis for interventions, the model has been applied to predict behaviors such as physical activity, nutrition, oral health, and hearing protection. One ongoing challenge is the model's complexity and the difficulty in measuring all its concepts comprehensively in research. Pender has made clinical assessment plans focusing on selected model concepts like prior behavior, personal factors, behavioral-specific cognitions, personal affect, interpersonal influences, situational influences, competing demands and preferences, and commitment to an action plan (Pender et al., 2011).

The core of the HPM lies in 14 theory assertions: (1) past behavior and personal traits influence a person's beliefs, feelings, and, ultimately, their health behaviors, (2) people are more likely to adopt behaviors they believe will bring them personal benefits, (3) perceived barriers can

hinder commitment to healthy behaviors, (4) self-efficacy in performing a healthy behavior increases the likelihood of doing it, (5) higher self-efficacy leads to seeing fewer barriers, (6) positive affect reinforces a positive cycle of self-efficacy and continued engagement, (7) positive emotions associated with a behavior make it more likely someone will commit to and perform it, (8) seeing positive role models, receiving encouragement, and getting support from others increases the likelihood of adopting healthy behaviors, (9) family, friends, and healthcare providers can significantly influence a person's health behaviors, (10) situational influences can either support or hinder HPB, (11) a strong commitment to a plan is crucial for maintaining healthy behaviors over time, (12) commitment to a course of action is less likely to lead to the intended behavior when individuals face competing demands that demand immediate attention and are beyond their control, (13) commitment to a plan of action is less likely to lead to the desired behavior when alternative actions are perceived as more appealing and, therefore, preferred over the intended behavior, (14) people can modify their thoughts, feelings, and environment to create a more supportive context for healthy actions (Murdaugh et al., 2019; Pender et al., 2011; Sakraida & Wilson, 2021).

In summary, the HPM highlights the complex interaction between individual characteristics, beliefs, environment, and social influences that influence the HPB.
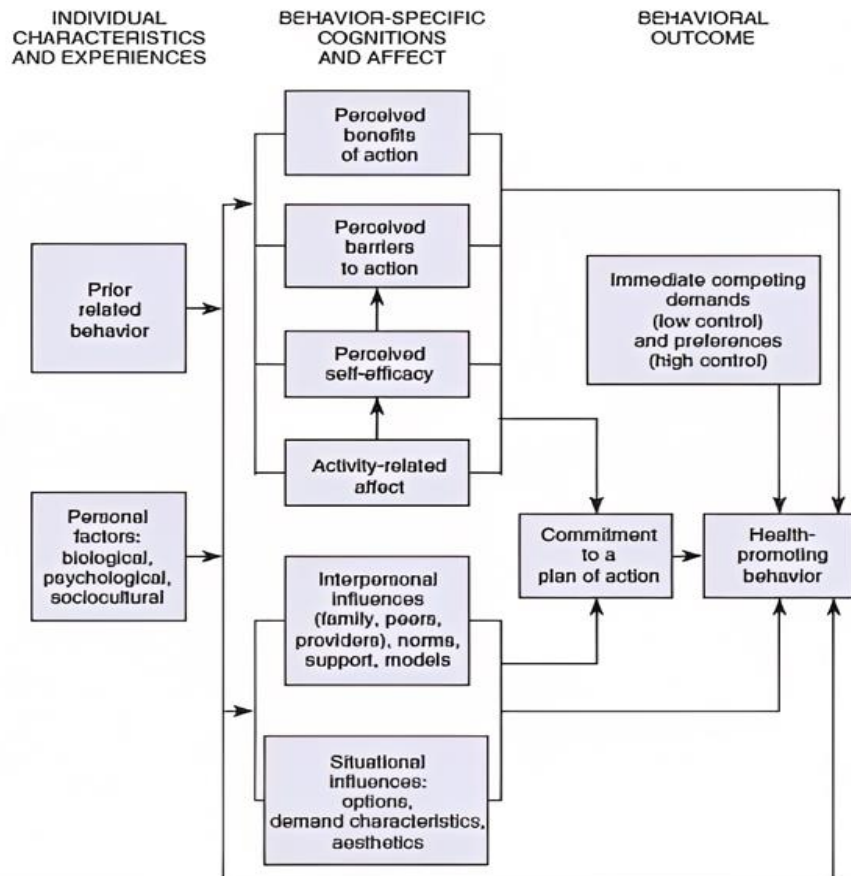
Figure 1. The Revised Health Promotion Model (Sakraida & Wilson, 2021)

Based on the literature review on HPB among adolescents, factors affecting HPB in adolescents living in child welfare institutions are conceptualized as shown in Figure 2.
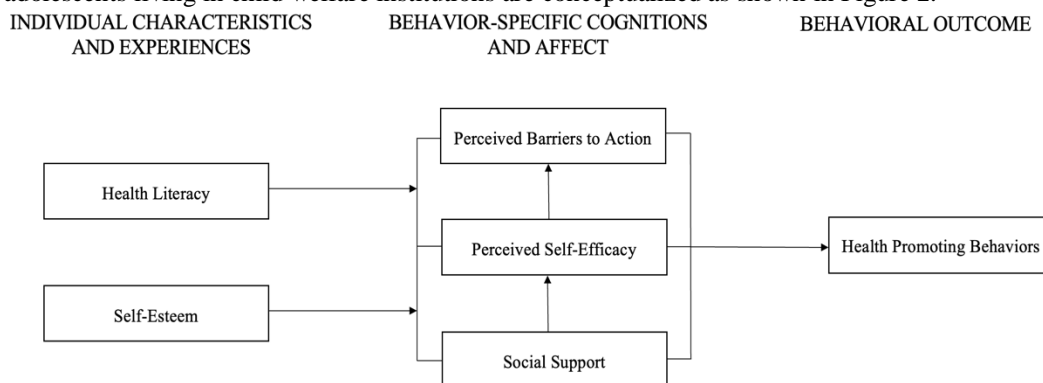
Figure 2. Conceptual Framework for the Study

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Previous studies have established a correlation between variables and considered two variables as exogenous variables for this study. The first variable that becomes an exogenous variable in this study is health literacy, and the second exogenous variable is self-esteem. The two exogenous variables equally affect the first endogenous variable, perceived barriers to action. The higher the health literacy, the lower the perceived barriers to action (Poon et al., 2023), and the higher the self-esteem, the lower the perceived barriers to action (Prieto, 2015).

The other second endogenous variable is perceived self-efficacy. The higher the health literacy, the perceived self-efficacy will increase as well (Ceylan et al., 2022), and high self-esteem also increases perceived self-efficacy (Flynn & Chow, 2017). Also, the higher the perceived self-efficacy, the lower the perceived barriers to action (Dishman et al., 2019).

The third endogenous variable is social support, which is from caregivers, peers, and friends living in child welfare institutions. The higher health literacy, the higher social support (Liu et al., 2020), and the higher the self-esteem, the higher the social support (Hu et al., 2022). Also, the higher social support, the higher perceived self-efficacy (Ren et al., 2020)

The fourth endogenous variable is HPB which is an endpoint toward positive health outcomes (Dishman et al., 2019). In this study, the HPB of adolescents consists of health responsibility, physical activity, nutrition, positive life perspective, interpersonal relationships, stress management, and spiritual health (Gaete et al., 2021). The lower the perceived barriers to action, the higher the HPB (Ferreira Silva et al., 2022). The higher the perceived self-efficacy, the higher the HPB (Wang & Chen, 2022). The higher the social support, the higher the HPB (Ren et al., 2020).

3.2   Hypothesized Model

The hypothesized model for this study consisted of two exogenous variables and four endogenous variables. The two exogenous variables are health literacy and self-esteem, while the four endogenous variables include perceived barriers to action, perceived self-efficacy, social support, and HPB.

In this hypothesized model, the paths are drawn from health literacy, self-esteem, perceived barriers to action, perceived self-efficacy, and social support on HPB. Figure 3 represents the hypothesized model for the present study.

INDIVIDUAL CHARACTERISTICS
AND EXPERIENCES

BEHAVIOR-SPECIFIC COGNITIONS
AND AFFECT

BEHAVIORAL OUTCOME
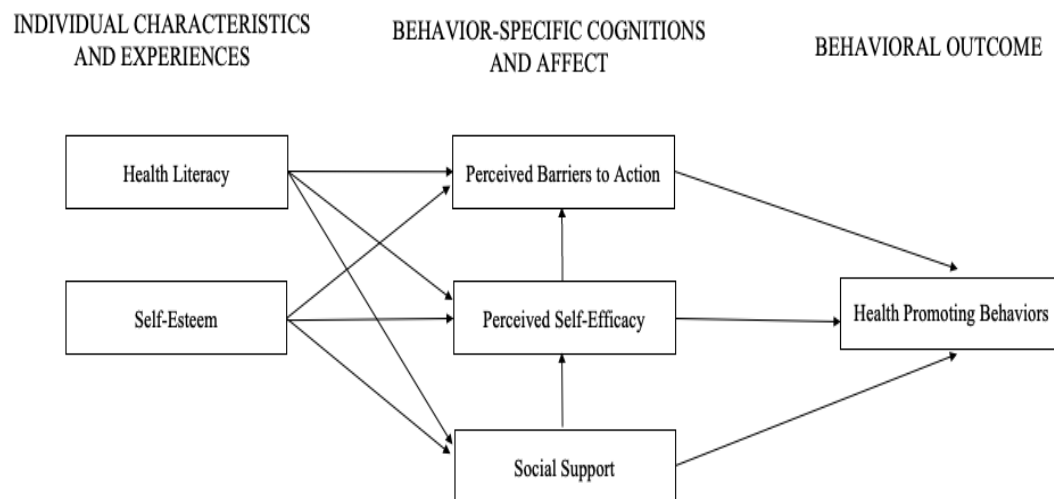
Figure 3. Hypothesized Model for the Study

IV. METHODS

4.1 Study Design

This was a correlational study using multivariate structural analysis to determine the causal relationship between the factors affecting HPB among adolescents living in child welfare institutions in East Java, Indonesia.

4.2 Study Setting

This study was conducted in Malang City, in the Province of East Java, Indonesia. Malang is the 12th largest city in Indonesia and the second largest city in the Province of East Java. In this study, 17 child welfare institutions in Malang City participated. Based on accreditation, 2 (12%) had level A, 7 (41%) had level B, 2 (12%) had level C, and 6 (35%) were not accredited.

Figure 4. Location of Study Setting (Tutuko et al., 2021)

4.3 Sample and Sampling

4.3.1 Inclusion Criteria

The study included adolescents aged 13-18 years who had lived in child welfare institutions in Malang City for at least 6 months and were willing to participate. The exclusion criteria were adolescents who have developed mental or physical disabilities.

4.3.2 Sampling

Convenience sampling was used to select the child welfare institutions within Malang City. In total, 17 child welfare institutions agreed to participate in this study. The number of adolescents living in these institutions ranged from 5 to 38 in each institution.

4.3.3 Minimum Sample Size

The estimation of the number of samples in SEM is flexible. Various rules of thumb can be used, such as 10 cases per variable, 5 or 10 observations per estimated parameter, and a minimum sample of 100 – 200 (Wolf et al., 2013). However, there is also a recommendation that a 200 sample size is a gold indicator in SEM, which is widely used in many studies (Crockett, 2012; Kline, 2023). In this study, the minimum sample size required is 200 people. However, considering the estimated dropout rate of 20% from previous studies (Cho et al., 2020; Kim & Yoo, 2016), the required sample size is calculated as a minimum of 250. A total of 280 respondents participated, but only 276 responses were included in the analysis.

4.4 Measurements

The measurements of variables in this study used instruments shown in Table 1. Permission to use the original instruments was obtained from all the authors before these instruments were used in this study.

1. HPB

HPB was measured using Adolescent Lifestyle Profile-Revised 2(ALP-R2), which was a revised version of The Adolescents Lifestyle Profile (ALP) (Hendricks et al., 2006). It was modeled after the health-promoting lifestyle profile II (HPLP II) for adults using Pender's Health Promotion Model as its conceptual framework (Walker & Hill-Polerecky, 1996). This instrument has 44 items which measure seven domains of HPB:

(a) Health responsibility (7 items) : Adolescents should learn to take responsibility for their health. It includes regular health check-ups, adherence to treatments, and awareness of their health needs and limitations (Gaete et al., 2021; Musavian et al., 2014).

(b) Physical activity (6 items) : Adolescents must recognize the importance of regular physical activity for their overall health and development (Anderson & Durstine, 2019; Bajamal et al., 2017).

(c) Nutrition (7 items) : Adolescents should learn to prioritize meeting their dietary needs to prevent deficiencies or excesses, which can lead to issues such as overweight, obesity, malnutrition, and anemia (Arbianingsih et al., 2021; Ardic & Esin, 2016).

(d) Positive life perspective (6 items): Adolescents should maintain a positive outlook on life, setting goals and expectations for the future. A positive life perspective helps foster resilience, coping skills, and gratitude (Gaete et al., 2021; Pigaiani et al., 2020).

(e) Interpersonal relationships (6 items): The ability to socialize and build connections with others plays a crucial role in adolescents' lives. Communication skills, empathy, and respect for others facilitate healthy relationships (Berhanu Belihu, 2022; Wu & Sheng, 2019).

(f) Stress management (6 items): Adolescents often encounter stressful situations which can lead to various unhealthy behaviors. Therefore, effective stress management skills contribute to improved health status (Adrian et al., 2014; Pop et al., 2021)

(g) Spiritual health (6 items): Nurturing spiritual well-being provides adolescents with purpose, meaning, and a sense of connection. This can be achieved by engaging in activities aligned with their personal religious or spiritual beliefs, values, and practices (Gaete et al., 2021).

The items were rated with a 4-point Likert scale (1=never, 2=sometimes, 3=often, 4=always) with a total score of 44-176. The higher the score, the higher the adolescents' HPB. This instrument has a Cronbach alpha of 0.928 (Buctot et al., 2020). In this study, this instrument's overall Cronbach's alpha was 0.86.

2. Health literacy

Health literacy was measured using the Health Literacy Assessment Scale for Adolescents (HAS-A) (Manganello et al., 2015). This instrument has 15 items and is subcategorized into communication (5 items), confusion (4 items), and functional health literacy scales (6 items).

Communication scale was assessed on a 5-point Likert scale (1=never, 2=rarely, 3=sometimes, 4=often, 5=always), and confusion and functional health literacy used a 5-point Likert scale (5=never, 4=rarely, 3=sometimes, 2=often, 1=always) with a total score of 15-75. The higher the score, the higher the adolescents' health literacy. The Cronbach alpha ranged from 0.73-0.77 for the three subscales (Manganello et al., 2015). Cronbach alpha of this study was 0.70.

3. Self-esteem

Self-esteem was measured using the Rosenberg Self-Esteem Scale (Rosenberg, 2015), which has already been adapted to the Indonesian language Alwi and Ahmad (2022). This instrument has 8 items and was rated with a 4-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree for questions number 1,2,3,6,8 and 4=strongly disagree, 3=disagree, 2=agree, 1=strongly agree for questions number 4,5,7) with a total score of 8-32. The higher the score, the higher the adolescents' self-esteem. The Cronbach alpha for Rosenberg Self-Esteem-Indonesia Adaptation was 0.89 (Alwi & Ahmad, 2022). In this study, Cronbach's alpha was 0.68.

4. Perceived barriers to action

Perceived barriers to HPB was measured using The Barriers to Health Promoting Activities Scale (Becker et al., 1991). This instrument has 18 items and was rated using a 4-point Likert scale (1=never, 2=sometimes, 3=often, 4=routinely) with a total score of 18-72. The higher the score, the higher the adolescents' perceived barriers to doing HPB. The Cronbach alpha for this instrument was 0.82 (Abdou & Helal, 2018), and the Cronbach's alpha for this study was 0.85.

5. Perceived self-efficacy

Perceived self-efficacy was measured using Self-Rated Abilities for Health and Practices (SRAHP) (Becker et al., 1993). This instrument has 28 items and is subcategorized into nutrition (7 items), psychological well-being (7 items), exercise (7 items), and responsible health practices scale (7 items). This instrument was rated using a 5-point Likert scale (1=cannot do at all, 2=a little, 3=somewhat, 4=mostly, 5=certain can do) with a total score of 28-140. The higher the score, the higher the adolescents' perceived self-efficacy. The Cronbach alpha for this instrument was 0.77 (Stephen et al., 2021). In this study, Cronbach's alpha was 0.92.

6. Social support

Social support was measured using the Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB) (Menon & Demaray, 2013). The original instrument assessed social support (emotional, informational, instrumental, and appraisal) for healthy behaviors in children and adolescents from parents, teachers, classmates, close friends, and people in school. The researcher adapted this instrument for this study with three sources of support: caregivers, peers, and friends living in child welfare institutions. This instrument has 36 items and has two subscales. Frequency responses were rated with a 6-point Likert scale (1=never, 2=almost never, 3=some of the time, 4=most of the time, 5=almost always, 6=always), and importance responses were rated with a 3-point Likert scale (1=not important, 2=important, 3=very important) with a total score of 72-324. The higher the score, the higher the adolescents' social support. The Cronbach alpha was 0.98 (Menon & Demaray, 2013). The Cronbach alpha for this study was 0.96.

7. Demographics

The participants' demographics were assessed using a sheet developed by the researcher. This sheet contained: (a) age (in years), (b) years living in child welfare institutions (in years), (c) gender, (d) education, (e) orphan status, (f) religion, (g) accreditation level of child welfare institutions.

Table 1. Measurements for the Study

Concepts	Variables	Instruments	Items	Type & Scoring
Behavior Outcome	HPB	Adolescent Lifestyle Profile-Revised 2 (ALP-R2)	44	4 Likert (1-4) Total 44-176
Individual Characteristics & Experiences	Health literacy	Health Literacy Assessment Scale for Adolescents (HAS-A)	15	5 Likert (1-5) Total 15-75
	Self-esteem	Rosenberg Self-Esteem – Indonesia Adaptation	8	4 Likert (1-4) Total 8-32
Behavior specific cognition and affect	Perceived barriers to action	The Barriers to Health Promoting Activities scale	18	4 Likert (1-4) Total 18-72
	Perceived self-efficacy	Self-Rated Abilities for Health and Practices (SRAHP)	28	5 Likert (1-5) Total 28-140
	Social support	Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB)	72	6 Likert (1-6) & 3 Likert (1-3) Total 72-324
Demographics	Age, Years living in child welfare institutions	Developed by the researcher	4	Continuous
	Gender, Education, Orphan status, Religion, Accreditation level of child welfare institutions		5	Nominal
		Total	**194**	

Five questionnaires (ALP-R2, HAS-A, The Barriers to Health Promoting Activities Scale, SRAHP, and CASSS-HB) were translated to Indonesian using forward-backward translation techniques (Lee et al., 2019; von Steinbuechel et al., 2021) which described as follows:

1. Forward translation: Two translators translated from English to Indonesian (version A).
2. Backward translation: A translator who did not know the original instruments translated version A back to English (version B).

3. Review of the forward and backward translation: The team and translators met to compare version B and the original version, focusing on conceptual differences, and develop the final forward translation (version C).

4. Cognitive debriefing: Five adolescents were interviewed to ensure that the translated questionnaire was easily understood and accurately captured the intended meaning of the original questionnaire (version D).

5. Internal harmonization: The team and translators met together again to review version D to ensure conceptual equivalence and proofread that will be the final version for instruments of this study (version E).

4.5 Data Collection

This study was conducted by a team consisting of principal investigators and six research assistants. The research assistants were third and fifth-semester undergraduate nursing students who had completed the pediatric nursing course and undertaken clinical studies. The search for the study location began in October 2023. The research assistants visited potential child welfare institutions and met with their directors to explain the study. If an institution agreed to participate, a schedule was arranged to conduct the survey in January 2024. During this phase, 16 child welfare institutions agreed to participate in the study.

The survey was conducted from January 14, 2024, to February 3, 2024. During this period, two institutions declined to participate, prompting the team to search for new potential institutions. Subsequently, three new child welfare institutions agreed to participate, bringing the total number of study locations to 17.

Prior to data collection, the six research assistants were trained by a principal investigator on how to interview participants. The researchers and assistants then visited the selected institutions according to the prearranged schedule. Upon arrival, the directors of each institution had already informed the potential participants about the survey. However, before starting the survey, the team emphasized the purpose of the study and the process to the participants.

During data collection, participants were accompanied by the research assistants. The questionnaires were presented through the Kobo toolbox questionnaire (www.kobotoolbox.org). The research assistants used tablets or notebooks to present the questionnaire link, read the questions, and gave participants time to fill in the answers. During this stage, research assistants assisted some

participants one by one. However, in some institutions with many participants and limited time for this survey, the research assistants assisted a group of participants. The research assistants also provided explanations if there were questions that participants needed help understanding.

It took approximately 45 minutes to complete the questionnaires. Before the answers were submitted online, the research assistants checked so there were no missing answers. Participants who completed the survey received a souvenir and lunch box for 2 US dollars.

The total number of participants in this study was 280. After compiling and checking the data, four were excluded because the participants' answers were straight to every question. The final analysis included 276 data.

4.6   Data Analysis

IBM SPSS statistics 26.0 and IBM AMOS 26.0 were used to analyze the data. IBM SPSS statistics was used to perform descriptive analyses of variables, internal consistency tests, independent t-tests, one-way ANOVA, pearson correlation, and post hoc analysis. IBM AMOS was used for path analysis to analyze the regression coefficient and effects (direct, indirect, and total) between the variables and evaluate the structural model's fit.

Before analyzing data using the structural equation model, preliminary analyses were performed. These analyses included checking univariate and multivariate outliers, univariate and multivariate normality data, and correlation between variables.

For structural equation model analyses, first, the model needs to be identified, and then the overall fit of the model needs to be evaluated. Some measurements were used to identify the goodness of fit for the model. A minimum of four tests were suggested to identify the overall model fit: Tucker-Lewis Index (TLI > 0.90), comparative fit index (CFI > 0.90), standardized root mean square residual (SRMR < 0.08), and root mean square error of approximation (RMSEA < 0.80) (Wang & Rhemtulla, 2021). Bootstrapping analysis with 5,000 samples and 95% bias-corrected confidence intervals were used to identify the significance of indirect and direct effects.

4.7 Ethical Consideration

The Institutional Review Board (IRB) of the Institute of Technology, Science and Health Soepraoen in Malang City, Indonesia, approved the study under protocol number KEPK-EC-10/XII/2023. Since adolescents are a vulnerable group and require guardian consent to be study participants, the director of the child welfare institutions provided written consent. In addition, all participants were asked to indicate assent before data collection. The study's objectives and procedures were informed to all participants and guardians. The researcher ensured the privacy and confidentiality of participant data by not recording identities and storing data on password-protected online storage accessible only to the researcher.

V. RESULTS

5.1 Characteristics of Participants

A total of 276 adolescents from 17 child welfare institutions in East Java, Indonesia, participated in this study. Over half were female (54%), and the majority were aged 13-15 years (56.2%), with a mean age of 15.24 (SD ±1.72) years. Nearly half were in senior high school (grades 10-12, 43.1%) and junior high school (grades 7-9, 42.8%). Most participants were Muslim (90.9%), and more than half were not orphans (51.1%). A total of 168 participants (60.9%) had been living in child welfare institutions for 1-3 years, with a mean of 3.37±2.46 years.

Table 2. Characteristics of Participants

(n=276)

Variables	Categories	Frequency	(%)	Mean±SD
Age	13-15 Years	155	56.2	
	16-18 Years	121	43.8	15.24±1.72
Gender	Male	127	46	
	Female	149	54	
Education	Primary School (Grade 6)	28	10.1	
	Junior High School (Grade 7-9)	118	42.8	
	Senior High School (Grade 10-12)	119	43.1	
	Graduated	11	4	
Religion	Islam	251	90.9	
	Protestant	17	6.2	
	Catholicism	8	2.9	
Orphan Status	Not Orphan	141	51.1	
	Maternal Orphan	23	8.3	
	Paternal Orphan	88	31.9	
	Double Orphan	24	8.7	
Living in Child Welfare Institutions	1-3 Years	168	60.9	
	4-5 Years	77	27.9	3.37±2.46
	More than 5 Years	31	11.2	
Accreditation of Child Welfare Institutions	A	20	7.2	
	B	125	45.3	
	C	51	18.5	
	Unaccredited	80	29	

5.2 Descriptive Statistic of Variables

5.2.1 Health Promoting Behaviors (HPB)

The mean total HPB score was 123.31±14. The highest mean score was for a positive life perspective (19.70±3.00). Other scores were spiritual health (19.26±2.79), stress management (18.01±2.46), nutrition (17.96±3.08), interpersonal relations (17.56±3.01), and physical activity (15.55±3.06). The lowest mean score was for health responsibility (15.26±3.45).

Table 3. Descriptive Statistics of HPB

(n=276)

Variables	Range	Mean	S.D	Min	Max
HPB	44-176	123.31	14.06	85	159
Health Responsibility	7-28	15.26	3.45	7	25
Physical Activity	6-24	15.55	3.06	8	24
Nutrition	7-28	17.96	3.08	10	26
Positive Life Perspective	6-24	19.70	3.00	9	24
Interpersonal Relations	6-24	17.56	3.01	10	24
Stress Management	6-24	18.01	2.46	10	24
Spiritual Health	6-24	19.26	2.79	11	24

5.2.2 Major Variables

The mean total score for health literacy was 46.95±7.03, with functional literacy scoring highest at 18.86±4.76 and the confusion scale lowest at 12.62±3.22. Self-esteem had a mean total score of 22.68±3.53. Perceived barriers to action had a mean total score of 38.32±8.26. Perceived self-efficacy had a mean total score of 99.62±17.81, with the highest subscale score in nutrition (26.15±4.76) and the lowest in exercise (24.06±5.73). Social support had a mean total score of 213.24±38.45, with instrumental support highest at 54.25±10.20 and appraisal support lowest at 52.13±10.34. Social support was highest from caregivers (76.23±16.11) and lowest from peers (67.62±14.49). Based on post hoc analysis, social support from caregivers is statistically higher than from peers, and also friends living in child welfare institutions ($p < 0.001$).

Table 4. Descriptive Statistics of Major Variables

(n=276)

Variable	Range	Mean	SD	Min	Max
Health Literacy	15-75	46.95	7.03	26	72
Communication	5-25	15.48	4.42	5	25
Confusion	5-25	12.62	3.22	4	20
Functional	5-25	18.86	4.76	6	30
Self-Esteem	8-32	22.68	3.53	11	32
Perceived Barriers to Action	18-72	38.32	8.26	19	64
Perceived Self Efficacy	28-140	99.62	17.81	52	140
Nutrition	7-35	26.15	4.76	13	35
Psychological Well Being	7-35	24.62	5.18	12	35
Exercise	7-35	24.06	5.73	7	35
Responsible Health Practices	7-35	24.80	5.46	11	35
Social Support Total	72-234	213.24	38.45	116	323
Emotional	18-81	53.36	10.08	26	80
Informational	18-81	53.50	10.33	22	81
Appraisal	18-81	52.13	10.34	29	81
Instrumental	18-81	54.25	10.20	26	81
Social Support Peers	24-108	67.62	14.49	26	107
Emotional	6-27	16.67	4.13	6	27
Informational	6-27	16.58	4.22	6	27
Appraisal	6-27	16.90	4.09	6	27
Instrumental	6-27	17.47	4.19	6	27
Social Support Friends	24-108	69.39	14.45	29	108
Emotional	6-27	17.33	4.14	6	27
Informational	6-27	17.40	3.99	6	27
Appraisal	6-27	17.16	4.03	6	27
Instrumental	6-27	17.50	3.89	8	27
Social Support Caregivers	24-108	76.23	16.11	24	108
Emotional	6-27	19.36	4.57	6	27
Informational	6-27	19.52	4.68	6	27
Appraisal	6-27	18.07	4.31	6	27
Instrumental	6-27	19.28	4.29	6	27

5.3 Differences in Mean Scores of Major Variables

Based on post hoc analysis, it was found that primary school students (116.82±13.08) had lower HPB scores than graduated students (118.27±12.48). Muslim adolescents had lower HPB scores (122.81±13.76) compared to Catholic adolescents (137.13±18.72). HPB was higher among those living in institutions for 1-3 years (123.60±13.96) and 4-5 years (125.22±14.05) compared to those living more than 5 years (117.00±13.30). Adolescents in level B institutions (125.45±13.36) had higher HPB scores than those in level C institutions (118.18±13.88). Unaccredited institutions (124.74±14.02) had higher HPB scores than level C institutions (118.18±13.88).

Adolescents aged 13-15 years (31.05±7.32) had lower health literacy than those aged 16-18 years (33.12±6.49). Males (45.94±6.40) had lower health literacy than females (47.82±7.44). Muslim adolescents had lower social support (212.27±37.27) compared to Catholic adolescents (256.00±43.52). Christian adolescents (207.47±43.73) also had lower social support than Catholic adolescents (256.00±43.52).

Adolescents in level A institutions (87.20±18.56) had lower perceived self-efficacy than those in level B (104.21±16.76) and unaccredited institutions (100.73±16.16). Level C institutions (91.53±17.93) had lower perceived self-efficacy than level B (104.21±16.76) and unaccredited institutions (100.73±16.16).

Table 5. Relationship between Demographic Characteristics and Variables

(n=276)

Variables	Categories	HPB	Health Literacy	Self-Esteem	Perceived Barriers	Perceived Self-Efficacy	Social Support
Age	13-15 Years	121.99±14.99	31.05±7.32*	22.38±3.55	19.84±8.05	70.56±19.15	211.12±40.59
	16-18 Years	125±12.64	33.12±6.49*	23.07±3.48	20.94±8.52	72.98±15.92	215.97±35.51
Gender	Male	124.23±14.28	45.94±6.40*	23.05±3.20	37.98±8.17	100.11±17.32	213.82±37.64
	Female	122.52±13.87	47.82±7.44*	22.38±3.76	38.61±8.35	99.21±18.27	212.75±39.25
Education	Primary School	116.82±13.08*	48.68±8.79	22.75±3.30	37.89±7.96	98.86±19.31	209.43±30.71
	Junior High School	123.59±14.69	45.73±6.86	22.52±3.42	37.99±7.65	99.90±18.53	212.91±40.96
	Senior High School	125.02±13.38*	47.63±6.72	22.83±3.79	38.76±9.17	99.52±17.32	215.50±38.71
	Graduated	118.27±12.48	48.36±5.90	22.73±2.45	38.27±4.82	99.73±12.63	202.18±23.77
Religion	Islam	122.81±13.76*	46.66±6.87	22.60±3.42	38.49±8.23	99.95±17.86	212.27±37.27*
	Protestant	124.18±13.70	49.24±5.48	23.00±4.05	37.76±7.87	90.82±14.73	207.47±43.74*
	Catholicism	137.13±18.71*	51.38±12.25	24.63±5.32	34.38±9.87	108.00±17.34	256.00±43.52*
Orphan Status	Not Orphan	124.16±14.14	47.06±7.38	23.03±3.67	38.16±8.02	98.68±17.81	214.38±39.39
	Maternal Orphan	120.91±13.90	49.57±7.12	22.17±3.88	39.87±9.04	98.61±14.02	207.35±33.36
	Paternal Orphan	123.76±14.54	46.45±6.90	22.57±3.26	37.88±7.98	102.56±19.16	215.97±38.09
	Double Orphan	118.96±11.47	45.63±4.62	21.58±3.18	39.42±10.01	95.38±15.12	202.25±38.54
Living in Child Welfare Institutions	1-3 Years	123.60±13.96*	46.31±7.21	22.68±3.41	38.76±8.20	98.63±18.10	213.69±38.65
	4-5 Years	125.22±14.05*	47.83±7.20	22.86±3.77	38.23±8.24	103.23±17.55	217.26±34.99
	More than 5 Years	117.00±13.30*	48.26±5.14	22.29±3.62	36.19±8.56	96.03±15.90	200.84±43.98
Accreditation of Child Welfare Institutions	A	117.30±15.02	45.65±7.98	22.60±3.84	39.20±8.35	87.20±18.56*	198.45±38.55
	B	125.45±13.36*	47.50±7.35	22.41±3.88	37.07±7.58	104.21±16.76*	217.83±36.53
	C	118.18±13.88*	45.65±5.98	22.39±3.47	40.02±9.37	91.53±17.93*	203.67±34.22
	Unaccredited	124.74±14.02*	47.26±6.88	23.33±2.83	38.98±8.36	100.73±16.16*	215.88±42.42

*p< .05, **p<0.01 ***p< .001

5.4 Preliminary Analyses

5.4.1 Outliers

For univariate outliers, no extreme outliers should be excluded in further analysis. There were some slight outliers, but they were still within the range of scoring in each variable. This can be considered included in the further analysis since they were slightly different, and the distribution data was still normal (table 6).

The Mahalonobis test was used to check multivariate outliers, with df=7, p-value 0.001, and critical value 24.322. The score of the Mahalonobis test is no more than 24.322 (range 1.428 – 21.208), so it can be concluded that there were no multivariate outliers. All the data can be included in further analysis.

Table 6. Univariate Outliers

Variables	Slight Outliers	Extreme Outliers
HPB	81, 95, 163	-
Health Literacy	6, 82, 99, 226, 257, 61, 74, 142, 172, 173, 188	-
Self Esteem	101, 239, 241, 259, 262, 183	-
Perceived Self Efficacy	-	-
Perceived Barriers to Action	161	-
Social Support	7, 126, 137, 161, 163, 244	-

5.4.2 Distribution of Normality

Most data had skewness and kurtosis between -1 and 1, indicating normal distribution. The kurtosis for health literacy was ≤ 4, still considered normal (Mishra et al., 2019). The Doornik-Hansen test for multivariate normality had a chi-square of 26.069 with 23 degrees of freedom (p=0.0105), indicating the data did not follow a multivariate normal distribution.

Table 7. Distribution of Normality of Variables

Variables	Skewness	Kurtosis
HPB	-0.02	-0.17
Health Literacy	0.30	1.12
Self-Esteem	-0.01	0.41
Perceived Barriers to Action	0.26	-0.23
Perceived Self Efficacy	-0.02	-0.43
Social Support	0.31	0.09

5.4.3 Correlations

Health literacy had a significant positive correlation with self-esteem (r=0.26, p<0.001), perceived self-efficacy (r=0.16, p<0.001), and HPB (r=0.13, p<0.05), and a significant negative correlation with perceived barriers to action (r=-0.31, p<0.001). Self-esteem had a significant positive correlation with perceived self-efficacy (r=0.35, p<0.001), social support (r=0.29, p<0.001), and HPB (r=0.31, p<0.001), and a significant negative correlation with perceived barriers to action (r=-0.32, p<0.001).

Table 8. Correlation between Variables

	Health Literacy	Self-Esteem	Perceived Barriers to Action	Perceived Self-Efficacy	Social Support
Health Literacy	1				
Self-Esteem	0.26[**]	1			
Perceived Barriers to Action	-0.31[**]	-0.32[**]	1		
Perceived Self-Efficacy	0.16[**]	0.35[**]	-0.29[**]	1	
Social Support	0.02	0.29[**]	-0.23[**]	0.53[**]	1
HPB	0.13[*]	0.31[**]	-0.15[*]	0.66[**]	0.53[**]

*p< .05, **p<0.01 ***p< .001

5.5   Structural Equation Model

5.5.1 Model Identification

In this study, six variables included in the model were observed variables with a single indicator. The two exogenous variables were health literacy and self-esteem, which act as independent variables or predictors of other observed variables in this model. The four endogenous variables were perceived barriers to action, perceived self-efficacy, social support, and HPB. HPB was also identified as the outcome of the model, while the perceived barriers to action, perceived self-efficacy, and social support were identified as mediators between the exogenous variables and HPB.

5.5.2 Model Evaluation and Overall Fit

In this model, the number of distinct sample moments was 21, and the number of distinct parameters to be estimated was 18. Therefore, the degree of freedom (df) was 21-18= 3. As the df was positive, a minimum was achieved, allowing further testing to be conducted (Kline, 2023).

This model had TLI 0.947, CFI 0.989, SRMR 0.000, and RMSEA 0.070, which indicated the model was a good fit.

Table 9. Model Fit of the Model

Indicator	Criterion	Results
X^2/df	<5.0	2.357
TLI (Tucker Lewis Index)	> 0.90	0.947
CFI (Comparative Fit Index)	>0.90	0.989
SRMR (Standardized Root Mean Residual)	<0.08	0.000
RMSEA (Root Mean Square Error Of Approximation)	<0.080	0.070
GFI (Goodness of Fit Index)	>0.90	0.992
NFI (Normed Fit Index)	>0.90	0.982
AGFI (Adjusted Goodness of Fit Index)	>0.80	0.941

5.4.3 Estimation and Significance of Path of the Model

The estimated standardized regression coefficients and their significance for the model are shown in table 10. It also provided results of the direct effects between endogenous and exogenous variables. Although 8 paths were significant, 3 others were not statistically significant.

In the path of HPB, perceived self-efficacy (β=0.538, $p<0.001$), and social support (β=0.256, $p<0.001$) had a significant positive correlation with the HPB. These variables explained 47.9% of HPB (SMC=0.479).

Health literacy (β=-0.234, $p<0.001$), self-esteem (β=-0.194, $p<0.01$), and perceived self-efficacy (β=-0.185, $p<0.01$) had a significant negative correlation with the perceived barriers to action. These variables explained 18.8% of perceived barriers to action (SMC=0.188).

Self-esteem (β=0.184, $p<0.001$) and social support (β=0.473, $p<0.001$) had a significant positive correlation with perceived self-efficacy. These two variables explained 32.8% of perceived self-efficacy (SMC=0.328).

Only self-esteem (β=0.303, $p<0.001$) had a significant positive correlation with social support, and this variable explained 8.6% of social support (SMC=0.086).

Table 10. Path Coefficients of the Model

Dependent variables	Independent variables	Standardized Coefficient (β)	SE	C.R	SMC
HPB	Perceived Barriers to Action	0.065	0.077	1.4302	0.479
	Perceived Self-Efficacy	0.538	0.042	10.179***	
	Social Support	0.256	0.019	4.995***	
Perceived Barriers to Action	Health Literacy	-0.234	0.066	-4.143***	0.188
	Self-Esteem	-0.194	0.139	-3.260**	
	Perceived Self-Efficacy	-0.185	0.027	-3.188**	
Perceived Self-Efficacy	Health Literacy	0.098	0.130	1.906	0.328
	Self-Esteem	0.184	0.270	3.432***	
	Social Support	0.473	0.024	9.149***	
Social Support	Health Literacy	-0.061	0.327	-1.018	0.086
	Self-Esteem	0.303	0.651	5.069***	

*p< .05, **p<0.01 ***p< .001

Table 11 summarizes the direct, indirect, and total effect analysis for the model. For HPB, perceived self-efficacy had a direct effect (β=0.538, p<0.001). Social support had both direct (β=0.256, p<0.001) and indirect effects (β=0.249, p<0.001). Self-esteem had only indirect effects (β=0.237, p<0.001).

For perceived barriers to action, self-esteem had both direct (β=-0.194, p<0.01) and indirect effects (β=-0.061, p<0.01). Health literacy (β=-0.234, p<0.01) and perceived self-efficacy (β=-0.185, p<0.01) had direct effects. Social support had only an indirect effect (β=-0.088, p<0.01).

For perceived self-efficacy, self-esteem had both direct (β=0.184, p<0.01) and indirect effects (β=0.143, p<0.001). Social support had a direct effect (β=0.473, p<0.001).

For social support, only self-esteem had a direct effect (β=0.303, p<0.001).

Table 11. Effect Coefficients of the Model

Dependent Variables	Independent Variables	Direct Effects	Indirect Effects	Total Effects
HPB	Perceived Barriers to Action	0.065		0.065
	Perceived Self-Efficacy	0.538***	-0.012	0.526***
	Social Support	0.256***	0.249***	0.505***
Perceived Barriers to Action	Perceived Self-Efficacy	-0.185**		-0.185**
	Social Support		-0.088**	-0.088**
	Health Literacy	-0.234**	-0.013	-0.247***
	Self-Esteem	-0.194**	-0.061**	-0.254***
Perceived Self-Efficacy	Health Literacy	0.098	-0.029	0.069
	Self-Esteem	0.184**	0.143***	0.327**
	Social Support	0.473***		0.473***
Social Support	Health Literacy	-0.061		-0.061
	Self-Esteem	0.303***		0.303***

*p< .05, **p<0.01 ***p< .001

Table 12 presented the mediation effects of the model. There was no direct path from health literacy to HPB, and there were no significant indirect effects on HPB through perceived self-efficacy and perceived barriers to action.

There was no direct effect on self-esteem on HPB. However, there was significant indirect effect on self-esteem on HPB through perceived self-efficacy (β=0.099, p<0.001) and self-esteem on HPB through social support (β=0.078, p<0.001). Also, indirect effect of self-esteem on HPB through social support and perceived self-efficacy (β=0.077, p<0.001). There was a significant indirect effect of self-esteem on HPB through multiple pathways through perceived self-efficacy, and social support.

Table 12. Mediation Effects of the Model

Effects	Paths	Standardized Coefficient (β)
Direct Effect	Health Literacy → HPB	-
Indirect Effect	Health Literacy → Perceived Barriers to Action → HPB	-0.015
	Health Literacy → Perceived Self-Efficacy → HPB	0.053
	Health Literacy → Social Support → HPB	-0.016
	Health Literacy → Perceived Self-Efficacy → Perceived Barriers to Action → HPB	-0.001
	Health Literacy → Social Support → Perceived Self-Efficacy → HPB	-0.016
	Health Literacy → Social Support → Perceived Self-Efficacy → Perceived Barriers to Action → HPB	0.000
Total Effect	Health Literacy → HPB	0.006
Direct Effect	Self-Esteem → HPB	-
Indirect Effect	Self-Esteem → Perceived Barriers to Action → HPB	-0.013
	Self-Esteem → Perceived Self-Efficacy → HPB	0.099**
	Self-Esteem → Social Support → HPB	0.078***
	Self-Esteem → Perceived Self-Efficacy → Perceived Barriers to Action → HPB	-0.002
	Self-Esteem → Social Support → Perceived Self-Efficacy → HPB	0.077***
	Self-Esteem → Social Support → Perceived Self-Efficacy → Perceived Barriers to Action → HPB	-0.002
Total Effect	Self-Esteem → HPB	0.237***

*p< .05, **p<0.01 ***p< .001

After completing the analysis of the hypothesized model, the final model of HPB among adolescents living in child welfare institutions in East Java, Indonesia, was presented in Figure 5.
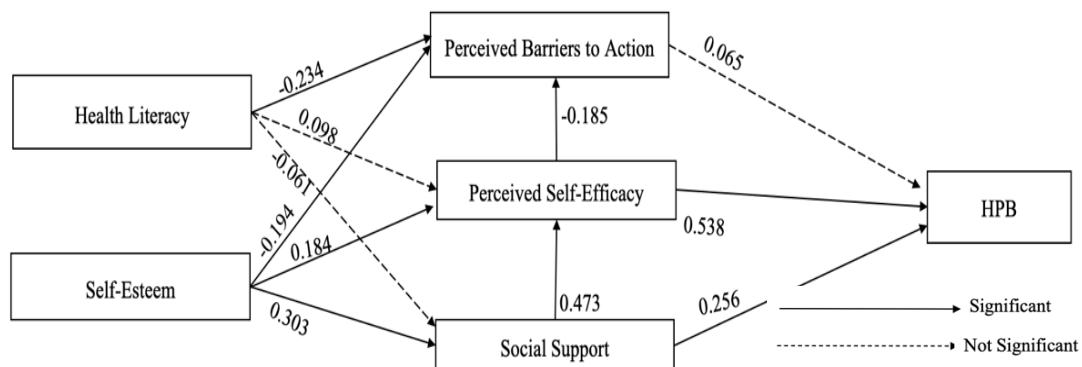
Figure 5. Path Coefficient Diagram of Final Model

5.6 Hypotheses Testing

5.6.1 Three hypotheses with HPB as the endogenous variables

H1. Perceived barriers to action has a negative relationship with HPB

H1 was rejected that perceived barriers to action to HPB was not significant, but it was a positive relationship (β=0.065, p>0.05).

H2. Perceived self-efficacy has a positive relationship with HPB

H2 was supported that perceived self-efficacy on HPB was significant (β=0.538, p<0.001).

H3. Social support has a positive relationship with HPB

H3 was supported that social support on HPB was significant (β=0.256, p<0.001).

5.6.2 Three hypotheses with perceived barriers to action as the endogenous variables

H4. Health literacy has a negative relationship with perceived barriers to action

H4 was supported that health literacy to the perceived barrier to action was significant (β=-0.234, p<0.001).

H5. Self-esteem has a negative relationship with perceived barriers to action

H5 was supported that self-esteem on perceived barriers to action was significant (β=-0.194, p<0.01).

H6. Perceived self-efficacy has a negative relationship with perceived barriers to action

H6 was supported that perceived self-efficacy to perceived barriers to action was significant (β=-0.185, p<0.01).

5.6.3 Three hypotheses with perceived self-efficacy as the endogenous variables

H7. Health literacy has a positive relationship with perceived self-efficacy

H7 was rejected that health literacy to perceived self-efficacy was not significant (β=-0.098, p>0.05).

H8. Self-esteem has a positive relationship with perceived self-efficacy

H8 was supported that self-esteem to perceived self-efficacy was significant (β=0.184, p<0.001).

H9. Social support has a positive relationship with perceived self-efficacy

H9 was supported that social support to perceived self-efficacy was significant (β=0.473, p<0.001).

5.6.4 Two hypotheses with social support as the endogenous variables

H10. Health literacy has a positive relationship with social support

H10 was rejected that health literacy to social support was not significant (β=-0.061, p>0.5).

H11. Self-esteem has a positive relationship with social support

H11 was supported that self-esteem to social support was significant (β=0.303, p<0.001).

VI. DISCUSSION

This study aimed to identify factors affecting health-promoting behaviors (HPB) among adolescents living in child welfare institutions in East Java, Indonesia, and to develop a structural equation model to explain the causal relationships among HPB, perceived barriers to action, perceived self-efficacy, social support, health literacy, and self-esteem. Based on the findings, the discussion section presented the HPB among these adolescents living in child welfare institutions and the structural equation model of HPB among these adolescents in East Java, Indonesia. The limitations, implications for practice, and suggestions for future studies are also discussed.

6.1 Health Promoting Behaviors Among Adolescents Living in Child Welfare Institutions

This study involved 278 adolescents from 17 child welfare institutions in Malang City, East Java, Indonesia, in 2024. Notably, among them, 51.1% still had both parents, while only 8.7% were double orphans. This indicates that the presence of adolescents in these institutions is not solely due to orphanhood but also other factors, especially economic difficulty (Rienneke & Setianingrum, 2018). Indonesia, as a developing country, faces the problem of poverty exacerbated by the COVID-19 pandemic, especially in Java and Bali (Romdiati & Kusumaningrum, 2022). Many families are unable to provide a decent life and education for their children, thus relying on child welfare institutions. In Malang City, many children and adolescents in orphanages still have families from lower economic classes in small towns around Malang who hope that child welfare institutions can provide a better education and life for their children (Putri, 2017).

The results showed that HPB among adolescents in these institutions was moderate level. Although no previous studies specifically on HPB in such adolescents exist, similar findings are observed in general adolescent populations in Turkey (Ozturk & Ayaz-Alkaya, 2020), Portugal (Tomás et al., 2015), Iran (Musavian et al., 2014), and India (Swaminathan et al., 2020).

In Indonesia, only one study has focused on HPB among adolescents, specifically high school students at a boarding school in Bali (Damayanti et al., 2020). The boarding school operates similarly to child welfare institutions in Indonesia, a private institution with limited government support and reliance on donations. It provides living arrangements and education to children and

adolescents from underprivileged families or remote areas (Damayanti et al., 2020). It was found that the HPB of these students was below standard, particularly in health responsibility of health promotion behaviors. This present study reflected similar findings, suggesting that adolescents are still learning to take responsibility for their health, often relying on caregivers due to a lack of knowledge and experience (Moilanen et al., 2018). However, the number of caregivers may not be sufficient in child welfare institutions, impacting the effectiveness of learning health responsibility.

Conversely, this study found that the highest-scoring domain was a positive life perspective, likely due to the stability provided by daily schedules in these institutions (Abidin, 2019). Additionally, the challenging backgrounds, including coming from low-income families, of these adolescents may foster resilience and adaptation, leading to a more positive outlook on their lives (Azpiazu Izaguirre et al., 2021; Putri et al., 2023).

Significant differences were found in HPB between primary and senior high school students, with high school students demonstrating better HPB due to greater autonomy and responsibility (Halpern-Felsher et al., 2016).

Adolescents living in child welfare institutions for more than five years significantly had lower HPB than those living for 1-3 years and 4-5 years. This could be due to adaptation to regular daily schedules, although prolonged stays without proper knowledge might normalize poor HPB. Adolescents who have just lived in these institutions might receive more attention and support from caregivers and peers than long-term residents, which might explain the differences in perceived social support.

HPB was significantly lower in level C institutions compared to level B, and also lower than unaccredited institutions. Level B institutions have better access to services and a more solid system than level C, providing adolescents with more facilities to perform good HPB. The lower HPB at level C compared to unaccredited institutions might be because unaccredited institutions vary in quality, and some may be good but do not seek accreditation. In Indonesia, the accreditation process is not mandatory for all child welfare institutions. This study also found that there were significant differences in HPB between adolescents of Islam and Catholic religions.

In summary, this study found that the HPB among these adolescents living in child welfare institutions in East Java, Indonesia, was moderate level, with significant variations based on the duration of living, the accreditation level of the institution, and the adolescents' educational level. Adolescents showed a positive life perspective due to stable routines and resilient attitudes fostered

by challenging backgrounds. However, health responsibility remains a key area requiring improvement, often hindered by insufficient caregiver support and resources. To address these issues, it is necessary to develop policies that increase both the quantity and quality of caregivers. Specialized training programs for caregivers are essential to maximize the proper care of children and adolescents in these institutions. Additionally, improving support for lower-level institutions will provide more opportunities for adolescents to develop good HPB.

6.2 Structural Equation Model of Health Promoting Behaviors Among Adolescents Living in Child Welfare Institutions

The Health Promotion Model demonstrated that HPB is influenced by individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes. This is the first study to identify the factors affecting HPB among adolescents living in child welfare institutions in Indonesia. In this study, perceived self-efficacy and social support explained 47.9% of HPB among these adolescents. Additionally, self-esteem had a significant indirect effect on HPB through perceived self-efficacy and social support.

A study in Turkey found that perceived self-efficacy correlated with HPB (Binay & Yiğit, 2016). Another study on 260 adolescents in secondary-level middle schools in Iran also showed that self-efficacy affects HPB, which in turn affects the health of adolescents (Yaychi et al., 2019). HPB is key to happiness and good quality of life, and self-efficacy will increase HPB at every stage of life (Sheeran et al., 2016). When people have confidence in their ability to perform HPB, they will make more effort to engage in these behaviors (Bakouei et al., 2018). With the presence of child welfare institutions that are more structured in their activities, perceived self-efficacy and social support play an important role in the formation of good HPB in adolescents living in these institutions.

Social support is another factor that affects HPB among adolescents. Adolescents with strong social support have high skills in performing HPB (Tabrizi et al., 2024). This study found that the greatest support significantly came from caregivers, aligning with a study from Jordan that found that parental support has a more significant impact on children's and adolescents' well-being compared to peers and teachers (Arabiat et al., 2018). In child welfare institutions, caregivers act as parents, supervising HPB among adolescents and providing more support.

This study also found that self-esteem had indirect effects on HPB in three ways. First, higher self-esteem improves perceived self-efficacy, thereby improving HPB. Second, higher self-esteem enhances social support, which then improves HPB. Lastly, higher self-esteem improves social support, which enhances perceived self-efficacy and, finally, HPB. Pajares and Urdan (2006) stated that perceived self-efficacy and social support contribute to consistent and persistent improvements in HPB among adolescents. Interventions focusing on improving self-esteem can effectively enhance HPB among adolescents in child welfare institutions.

Interestingly, this study found that perceived barriers to action tend to be low and not significant to HPB among adolescents in child welfare institutions in East Java, Indonesia. In the Health Promotion Model, these two variables are correlated, as demonstrated in studies on nutrition and physical activity among adolescents (Ferreira Silva et al., 2022; Wang & Chen, 2022). However, similar to a study of adolescent mothers in Thailand, this study found that perceived barriers to action did not affect HPB (Sangsawang et al., 2019). It could be explained by their unique situation in child welfare institutions. In child welfare institutions, adolescents primarily have structured access to all activities that support them to perform HPB. This structural support reduces the barriers usually experienced by adolescents living at home. In addition, life in these institutions is usually more organized with regulated schedules, so adolescents get used to performing HPB in their situation. Additionally, supervision by caregivers leads adolescents to leave all their health decision-making to caregivers and institutions.

Furthermore, health literacy, self-esteem, and perceived self-efficacy explained 18.8% of perceived barriers to action among adolescents in child welfare institutions in East Java, Indonesia. These findings align with studies on adults (Jeong & Kim, 2016). Similar findings were observed in studies on college and graduate students, where higher self-esteem correlated with lower perceived barriers to action (Avci et al., 2014; Prieto, 2015). Adolescents in child welfare institutions with high health literacy and self-esteem may have increased self-confidence and motivation, reducing perceived barriers to action.

The current finding aligns with a USA study of students in grades 5 to 11, showing that higher perceived self-efficacy lowers perceived barriers to physical activity, a subdomain of HPB (Dishman et al., 2019). It also highlights that social support indirectly reduces perceived barriers to action by boosting perceived self-efficacy. Higher social support leads to higher perceived self-efficacy and fewer perceived barriers. With limited studies on this topic, especially among

adolescents, this finding provides valuable evidence of the correlation between social support, self-esteem, perceived self-efficacy, and perceived barriers to action.

This current study also found that self-esteem and social support explained 32.8% of perceived self-efficacy among adolescents in child welfare institutions in East Java, Indonesia. Additionally, self-esteem had indirect effects on perceived self-efficacy through social support. This finding aligns with previous studies in adolescents that stated that higher self-esteem improves perceived self-efficacy (Asakereh & Yousofi, 2018; Christy & Mythili, 2020; Saunders et al., 2016; Usán Supervía et al., 2023). People with high self-esteem tend to have high perceived self-efficacy to resolve problems (Flynn & Chow, 2017; Mailey et al., 2016; Saunders et al., 2016). In child welfare institutions, creating a nurturing environment that increases self-esteem and interpersonal relationships can indirectly affect adolescents perceived self-efficacy, thus influencing their adoption of good HPB.

The finding of this study is also consistent with studies on the HPB of adolescents in Norway and the physical activity of adolescents in China, which found that social support positively correlates with perceived self-efficacy (Kleppang et al., 2023; Ren et al., 2020; Yiming et al., 2023). Even though there were limited studies on self-esteem's indirect effects on perceived self-efficacy through social support, this finding provides more evidence of this correlation, especially among adolescents in child welfare institutions.

However, this current study found that health literacy had no significant correlation with perceived self-efficacy. This finding is not in line with studies that found a positive relationship between health literacy and self-efficacy in adolescents in Australia, China, Turkey, and Germany (Ceylan et al., 2022; Guo et al., 2020; Loer et al., 2020). It is likely because, although the health literacy of adolescents in child welfare institutions is still at a moderate level, they are not fully confident in performing good HPB. Adolescents are still learning to be independent and lack autonomy in many of their activities (Tabrizi et al., 2024). Additionally, they also lack practical experience in performing good HPB (Kahn & Graham, 2020)

Only self-esteem had a significant positive correlation with social support, explaining 8.6% of social support in adolescents in East Java, Indonesia. This aligns with studies from Xin et al. (2019) and Hu et al. (2022) that found self-esteem positively correlates with social support among adolescents. Although adolescents in child welfare institutions do not have parental social support, caregivers act as parental figures and play a significant role in their lives. This study confirms that

higher self-esteem leads to more active social engagement, increasing perceived social support (Shi et al., 2017). This current study found that self-esteem among adolescents was at moderate levels, similar to other findings that self-esteem in adolescents living in child welfare institutions is at a low or moderate level (Febristi et al., 2020; Lete et al., 2019; Mohammadzadeh et al., 2018), so interventions to improve self-esteem will enhance both social support and HPB.

6.3   Limitations of Study

Some limitations can be noted in this study:

1. This study used a cross-sectional design and convenience sampling methods, involving 17 child welfare institutions willing to participate. Therefore, generalizing the findings should be done with caution.

2. This study did not collect data on social support from parents. This omission might have affected the levels of social support available to adolescents and their HPB.

3. Confirmatory factor analysis was not performed during the instrument translation process, which could reduce the validity of the translated instrument. Caution is needed when generalizing these findings.

4. The study used six research assistants for data collection, requiring inter-rater reliability evaluation. Although research assistants were trained to ensure consistent interpretation of instruments, periodic meetings were not held to calibrate interpretations and discuss issues during data collection. This may reduce the reliability and accuracy of the data collection process, necessitating caution in generalizing the findings.

6.4   Implications For Practice

6.4.1 Nursing Policy

The findings from this study highlight the need for policies to improve HPB in adolescents living in child welfare institutions in Indonesia. The large number of unrecorded child welfare institutions hinders the provision of nursing interventions to these children and adolescents. Coordination between the Social Affairs Office and the Public Health Office is essential, starting from data collection of child welfare institutions to regular monitoring of the health and welfare of children in these institutions. This will enable nurses to provide optimal health services and interventions for these adolescents.

6.4.2 Nursing Education

This study provides evidence that the Health Promotion Model by a nursing theorist, Nola Pender, can explain HPB in adolescents living in child welfare institutions. This evidence will help Indonesian nursing professionals understand the unique circumstances and HPB among adolescents in these institutions. With HPB among these adolescents considered at a moderate level, nursing interventions based on HPM can be designed to improve their HPB. This study found that self-esteem, social support, and perceived self-efficacy affect HPB, so nursing interventions can focus on improving these variables to enhance HPB among adolescents in child welfare institutions. Targeted interventions will positively impact their HPB and prepare them for adulthood and the transition from child welfare institutions to outside these institutions.

6.4.3 Nursing Practice

While school-based interventions are often considered effective, a review by Nyman et al. (2022) found that these interventions were insufficient for HPB. This is consistent with conditions in Indonesia, where the concept of school nurses is not widespread. Only a few private schools have healthcare professionals who work full-time or part-time at school. This may lead to inadequate nursing interventions in schools. Public health centers, where nurses act as community health nurses, are the closest access points for adolescents. Public health centers conduct annual health screenings for school students and have a Youth Health Care Program (PKPR) that usually provides health services and health education to schools at least twice a year. Within these programs, nurses can also administer HPB assessments and provide education to adolescents in schools.

Nyman et al. (2022) also suggested extending interventions beyond the school setting into the home. This is feasible in Indonesia. The study found that social support from caregivers and friends in child welfare institutions is more significant than from peers. Unfortunately, public health centers do not have specific programs for child welfare institutions but have the Islamic Boarding Schools Health Care Center (Poskestren) program, which focuses on health services to Islamic boarding schools. Public health centers can include child welfare institutions in this program, conducting nursing interventions for adolescents, caregivers, and other children in these institutions, thus improving HPB among adolescents in Indonesia.

Furthermore, nursing faculty members and students can be directly involved through community service programs, where they can go to child welfare institutions to conduct HPB

interventions and regularly supervise the results. These programs allow nursing students to apply theory in practice while helping the community improve their health status.

6.5   Suggestions for Future Studies

Although this study provides a significant understanding of HPB among adolescents living in child welfare institutions, there are still some things that cannot be studied further, so some suggestions for future studies are as follows:

1. Indonesia is a multiethnic country and recognizes the importance of religion in its society. Hence, culture and religiosity need to be considered to identify whether these factors affect HPB among adolescents living in child welfare institutions in Indonesia.

2. Assessment of parental social support should be included since most respondents still have parents with whom they do not live but might still have contact. This will help better understand its impact on HPB among adolescents living in child welfare institutions in Indonesia.

3. There is a need to develop valid instruments that are in accordance with the culture of Indonesian people and the situation in child welfare institutions in Indonesia to get more accurate results of HPB among adolescents living in child welfare institutions in Indonesia.

4. Using a larger sample with robust sampling methods will have more significant results on the understanding of HPB among adolescents living in child welfare institutions in Indonesia.

VII. CONCLUSION

This study identified factors affecting HPB among adolescents living in child welfare institutions in East Java, Indonesia, based on the Health Promotion Model by Nola Pender. This study employed a structural equation modeling approach to analyze the data. Even though some hypotheses were rejected, this study could explain the factors that influence HPB among adolescents in child welfare institutions in East Java, Indonesia.

Perceived self-efficacy and social support accounted for 47.9% of HPB among adolescents in child welfare institutions in East Java, Indonesia. Self-esteem indirectly affected HPB through perceived self-efficacy and social support pathways. Perceived barriers to action did not significantly impact HPB. Health literacy, self-esteem, and perceived self-efficacy explained 18.8% of perceived barriers to action. Self-esteem and social support together explained 32.8% of perceived self-efficacy. Additionally, only self-esteem showed a significant positive correlation with social support, explaining 8.6% of social support among adolescents in East Java, Indonesia.

Nursing interventions to improve HPB among adolescents living in child welfare institutions in Indonesia should not focus only on school settings. They should also be provided through child welfare institutions so that not only adolescents but also caregivers and friends living in these institutions can benefit from these interventions. It is hoped the interventions will give more social support from caregivers and friends living in the same institutions for adolescents to improve and maintain a good HPB that will lead to improved quality of life and health status into adulthood.

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APPENDICES

Informed Consent

To: Mr/Mrs _____

My Name is Aloysia Ispriantari. I am a Ph.D. student at the College of Nursing at Yonsei University. I am conducting a survey about health promoting behaviors among adolescents living in child welfare institutions in Indonesia.

In this study, I and the research assistants will talk to adolescents and ask them a number of questions. The questions usually take about 30-45 minutes. All the information we collect will be for academic purposes, will be confidential, and will not be shared with anyone other than members of our survey team.

You do not have to decide today whether or not you agree to have the adolescents living in this institution participate in this study. However, we hope you will agree since their answers are very important. If you agree, then we will ask the adolescents for their agreement as well. Both of you have to agree independently before we begin.

In case you need more information about the survey, you may contact me or the researcher assistants.

Certificate of Consent

I have been asked to give consent for adolescents living in this institution to participate in this study which will involve them completing one interview and one questionnaire. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask question about it and any questions that I have asked to have been answered to my satisfaction.

I consent voluntary for the adolescents living in this institution to participate as participants in this study.

Name : _____   Signature:_____

Date : _____

Certificate of Consent From Adolescents

I have been informed that the head of my institution has given me permission to participate in this study. I declare my participation voluntarily, and I can stop whenever I want. I also have the right to ask questions or ask for explanations from the researcher if there are things that I want to know about this study.

I believe that the privacy and confidentiality of the research data will be guaranteed. By affixing my signature below, I confirm my voluntary participation in this study.

Name : _____   Signature:_____

Date : _____

Questionnaires

Sociodemographic

Age	: _____ Years
Gender	: Boy/Girl
Education (Grade Class)	: 7 / 8 / 9/ 10/ 11 /12
Religion	: _____
Orphan status	: maternal orphan / paternal orphan/ double orphan /
	not orphan
Living in child welfare institutions	: _____ Years
Weight	: _____ kg
Height	: _____ cm

Health Literacy Assessment Scale for Adolescents (HAS-A)

Please read each question carefully and indicate your response to the answer that best reflects your ability to understand and use health information.

Response: 1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always

No	Questions	1	2	3	4	5
1	How often is it easy for youto ask your doctor questions about your health?					
2	How often does your doctor understand what you mean when you ask him or her a question about your health?					
3	How often can you easily describe a health problem you have to your doctor?					
4	How often does your doctor seem to understand you when you answer a question he or she asks?					
5	How often do you understand the answers your doctor gives to your questions?					
6	How often do you get confused because you find different information about the same health topic?					
7	How often do you get confused when your doctor tells you about taking a medicine?					
8	How often do you get confused when your doctor tells you about possible side effects from a medicine or treatment?					

No	Questions	1	2	3	4	5
9	How often do you get confused when your doctor tells you about test results, like results of an X-ray?					
10	How often do you get confused when reading instructions for medicine?					
11	How often do you have problems learning about an illness or health topic because of difficulty understanding the written information you get?					
12	How often do you think the forms you complete at your doctor's office are confused?					
13	How often are you confused by health information that has a lot of numbers and statistics?					
14	When you talk to people other than your doctor about health issues, how often are you confused by what they tell you?					
15	When reading brochures or hand-outs about health issues, how often do you need someone to help you read them?					

Rosenberg Self-Esteem Scale

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

Response: 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Disagree

No	Questions	1	2	3	4
1	On the whole, I am satisfied with myself				
2	I feel that I have anumber of good qualities				
3	I am able to do things as well as most other people				
4	I feel I do not have much to be proud of				
5	I certainly feel useless at times				
6	I feel that I'm a person of worth, at least on anequal plane with others				
7	All in all, I am inclined to feel that I am a failure				
8	I take a positive attitude toward myself				

The Barriers to Health Promoting Activities Scale

People sometimes have problems doing what they want to do to stay healthy. Please read each question carefully and indicate your response to the answer that best reflects how much each of these problems keeps you from taking care of your health.

Response: 1=Never, 2=Sometimes, 3=Often, 4=Routinely

No	Questions	1	2	3	4
1	Lack of convenient facilities				
2	Too tired				
3	Lack of transportation				
4	Feeling what I do doesn't help				
5	Lack of money				
6	Impairment				
7	No one to help me				
8	Not interested				
9	Lack of information				
10	Embarrassment about my appearance				
11	Concern about safety				
12	Lack of support from family/friends				
13	Interferes with other responsibilities				
14	Lack of time				
15	Feeling I can't do things correctly				
16	Difficulty with communication				
17	Bad weather				
18	Lack of help from health care professionals				

The Self Rated Abilities for Health Practices Scale (SRAHP)

The following scale asks whether you are able to perform various health practices within the context of your lifestyle Read each statement and use the following scale to indicate how well you are able to do each of the health practices, not how often you actually do it.

Response: 1=Cannot do at all, 2=A little, 3=Somewhat, 4=Mostly, 5=Certain can do

No	Questions	1	2	3	4	5
	I am able to					
1	Find healthy foods that are within my budget					
2	Eat a balanced diet					
3	Figure out how much I should weight to be healthy					
4	Brush my teeth regularly					
5	Tell which foods are high in fiber content					
6	Figure out from labels what foods are good for me					
7	Drink as much water as I need to drink every day					
8	Figure out things I can do to help me relax					
9	Keep myself from feeling lonely					
10	Do things that make me feel good about myself					
11	Avoid being bored					
12	Talk to friend and family about the things that are bothering me					
13	Figure out how I respond to stress					
14	Change things in my life to reduce my stress					
15	Do exercises that are good for me					
16	Fit exercise into my regular routine					
17	Find ways to exercises that I enjoy					
18	Find accessible places for me to exercise in the community					
19	Know when to quit exercising					
20	Do stretching exercises					
21	Keep from getting hurt when I exercise					
22	Figure out where to get information on how to take care of my health					
23	Watch for negative changes in my body's condition (pressure sores, breathing problems)					
24	Recognize symptoms that should be reported to a doctor or nurse					
25	Use medication correctly					
26	Find a doctor or nurse who gives me good advice about how to stay healthy					
27	Know my rights and stand up for myself effectively					
28	Get help from others when I need it					

Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB)

These sentences ask about some form of help that you may get from peers, friends, and caregivers in your child welfare institutions. There are no right or wrong answers. For each sentence, you select two responses. First, rate how often you receive the support described in the statement, then rate how important the support is to you.

Response how often: 1=Never, 2=Almost Never, 3=Some of the Time, 4=Most of the Time, 5=Almost Always, 6=Always

Response how important: 1=Not Important, 2=Important, 3=Very Important

No	Questions	How often?						Important?		
		1	2	3	4	5	6	1	2	3
Peers										
1	Respect my healthy choice									
2	Encourage me to eat healthy or be active									
3	Make it okay to ask questions about my health									
4	Give me suggestions about how to eat healthy									
5	Give me information about how to stay active									
6	Give me good advice about staying healthy									
7	Tell me I did a good job when I exercise or eat healthy									
8	Nicely tell me when I make poor choices about my health									
9	Notice when I work hard to be healthy									
10	Ask me to join physical activities									
11	Spend time being active with me									
12	Help me make healthy choices									
Friends Living in Child Welfare Institutions										
1	Respect my healthy choice									
2	Encourage me to eat healthy or be active									
3	Make it okay to ask questions about my health									
4	Give me suggestions about how to eat healthy									
5	Give me information about how to stay active									
6	Give me good advice about staying healthy									
7	Tell me I did a good job when I exercise or eat healthy									
8	Nicely tell me when I make poor choices about my health									
9	Notice when I work hard to be healthy									
10	Ask me to join physical activities									
11	Spend time being active with me									
12	Help me make healthy choices									
Caregivers										
1	Show they care about my health									
2	Encourage me to eat healthy or be active									

No	Questions	How often?						Important?		
		1	2	3	4	5	6	1	2	3
3	Listen to me when I asked questions about my health									
4	Make suggestions about how to eat healthy									
5	Give me good advice about how to take care of my body									
6	Give me information about foods that are good for me									
7	Tell me I did a good job when I exercise or eat healthy									
8	Nicely tell me when I make poor choices about my health									
9	Reward me when I exercise or eat healthy									
10	Help me practice my physical activities or eating healthy habits									
11	Take time to help me make healthy food choice									
12	Give me many of the foods I need to be healthy									

Ethical Clearance

YAYASAN WAHANA BHAKTI KARYA HUSADA
INSTITUT TEKNOLOGI SAINS DAN KESEHATAN RS dr. SOEPRAOEN
KOMITE ETIK PENELITIAN KESEHATAN
Jl. Sodanco Supriadi Nomor 22 Malang 65147 Telp. (0341) 351275
https://itsk-soepraoen.ac.id/ Email : kepk@itsk-soepraoen.ac.id

YWBKH

KETERANGAN LAYAK ETIK
DESCRIPTION OF ETHICAL EXEMPTION
"ETHICAL EXEMPTION"

No.KEPK - EC / 10 / XII / 2023

Protokol penelitian versi 1 yang diusulkan oleh :
The research protocol proposed by

Peneliti utama   : Ns. Aloysia Ispriantari, M.Kep
Principal In Investigator

Nama Institusi   : ITSK RS dr. Soepraoen
Name of the Institution

Dengan judul:
Title

"Model Persamaan Struktural Perilaku Promosi Kesehatan pada Remaja di LKSA (Lembaga Kesejahteraan Sosial Anak) di Jawa Timur, Indonesia"

"A Structural Equation Model of Health Promoting Behaviors among Adolescents Living in Child Welfare Institutions in East Java, Indonesia"

Dinyatakan layak etik sesuai 7 (tujuh) Standar WHO 2011, yaitu 1) Nilai Sosial, 2) Nilai Ilmiah, 3) Pemerataan Beban dan Manfaat, 4) Risiko, 5) Bujukan/Eksploitasi, 6) Kerahasiaan dan Privacy, dan 7) Persetujuan Setelah Penjelasan, yang merujuk pada Pedoman CIOMS 2016. Hal ini seperti yang ditunjukkan oleh terpenuhinya indikator setiap standar.

Declared to be ethically appropriate in accordance to 7 (seven) WHO 2011 Standards, 1) Social Values, 2) Scientific Values, 3) Equitable Assessment and Benefits, 4) Risks, 5) Persuasion/Exploitation, 6) Confidentiality and Privacy, and 7) Informed Concent, referring to the 2016 CIOMS Guidelines. This is as indicated by the fulfillment of the indicators of each standard.

Pernyataan Laik Etik ini berlaku selama kurun waktu tanggal 04 Desember 2023 sampai dengan tanggal 03 Desember 2024.

This declaration of ethics applies during the period December 04, 2023 until December 03, 2024.

December 04, 2023
Professor and Chairperson,

dr. Leny Candra Kurniawan, M.M

Permission To Use Instruments

Permission to Use the Adolescent Lifestyle Profile©

I plan to use the **Adolescent Lifestyle Profile©** in a research or evaluation project entitled:

A Structural Equation Model of Health Promoting Behaviors Among Adolescents Living in Child Welfare Institutions in East Java, Indonesia

1_____ I am enclosing a check/money order for ten dollars-US (**$10.00**) payable to the
Adolescent Health Promotion Project
Or (preferred)

_Yes_____ I have made a **$10.00 donation** to the **Dr. Constance Smith Hendricks Nursing Scholarship** using either of the links provided below-donation receipt enclosed:

www.uab.edu/give/hendricks or
https://www.memberplanet.com/campaign/cshnursingscholarship/donations

2. _Yes_____ I agree to provide a copy of the psychometric properties of the ALP from my research when completed.

3. _Yes_____ I understand that the instrument **may not** be produced in the appendix of a thesis, dissertation or research grant proposal without further permission. Reproduction for any other purpose, including the publication of study results, is prohibited without specific permission.

Aloysia Ispriantari
_____
Print Name

Graduate Student of College of Nursing, Yonsei University
_____
Position/Institution

50-1, Yonsei-Ro, Seodaemun-gu, Seoul 03722, Republic of Korea
_____
Mailing Address

aloysia.tari@yonsei.ac.kr

Signature

82   1029700907
Area Code   Telephone#

Email

NOTE: You must return this completed form with my signature.

My signature below indicates that permission is granted to the above investigator to copy and use the Adolescent Lifestyle Profile© for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in anyway and the copyright/permission statement at the end is retained.

Constance S.Hendricks, RN, PhD, FAAN   September 27, 2023
Constance S. Hendricks, PhD, RN, FAAN   Date

Please send **two signed copies** of this page with donation verification to:

Constance S. Hendricks, PHD, RN, FAAN
P.O. Box 986   Selma, AL 36702   334-332-3850; drcsh92@gmail.com

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Requesting Health Literacy Assessment Scale for Adolescents (HAS-A) permission for Dissertation   Inbox ×

Ispriantari,Aloysia (일반대학원 간호학과)   Wed, Sep 20, 2023, 10:44 PM   ☆

Dr. Manganello, I am a Doctoral student at College of Nursing, Yonsei University, Seoul, South Korea. For my dissertation, I plan to investigate the health prom...

Manganello, Jennifer <jmanganello@albany.edu>   Wed, Sep 20, 2023, 10:46 PM   ☆   ↩   ⋮
to me ▾

Yes, feel free to use it! The questions are listed in Table 3 of the paper.

Best of luck with your work!

Jennifer Manganello

From: Ispriantari,Aloysia (일반대학원 간호학과) <aloysia.tari@yonsei.ac.kr>
Sent: Wednesday, September 20, 2023 9:44 AM
To: Manganello, Jennifer <jmanganello@albany.edu>
Subject: Requesting Health Literacy Assessment Scale for Adolescents (HAS-A) permission for Dissertation

⋯

...

[Message clipped]   View entire message

Requesting the Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB) permission for Dissertation   Inbox ×

Ispriantari,Aloysia (일반대학원 간호학과)   Thu, Sep 21, 2023, 11:20 PM   ☆

Dr. Demaray, I am a Doctoral student at College of Nursing, Yonsei University, Seoul, South Korea. For my dissertation, I plan to investigate the health promoti...

Michelle Demaray <mkdemaray@niu.edu>   Sun, Oct 1, 2023, 2:44 AM   ☆   ↩   ⋮
to me ▾

Dear Aloysia,

Sorry for my delay. Attached is the CASSS-HB.

Thank you,

Michelle K. Demaray, Ph.D.
Professor
Department of Psychology
Director of Undergraduate Studies, Psychology
NIU Presidential Research Professor

⋯

...

[Message clipped]   View entire message

2 Attachments • Scanned by Gmail ⓘ

W CASSS_HB cover ...   W CASSS_HB_final....

74

Permohonan Ijin Rosenberg's Self-Esteem Indonesia `External` `Inbox ×`

Aloysia Ispriantari Thu, 21 Sept 2023, 13:15

Kepada Dr. M. Ahkam Alwi, S.Psi., M.Psi Selamat pagi, Bapak. Perkenalkan nama saya Aloysia, dosen keperawatan di ITSK Soepraoen Kota Malang. Saat ini saya sedan

M. AHKAM A, S.Psi, M.Si. UNM <m.ahkam.a@unm.ac.id> Thu, 21 Sept 2023, 15:52

to me

🗎 **Translate to English** ×

Silakan mbak digunakan

...

One attachment · Scanned by Gmail ⓘ

W adaptasi skala ha...

English version

Application of Ijin Rosenberg's Self-Esteem Indonesia `External` `Inbox ×`

Aloysia Ispriantari Thu, 21 Sept 2023, 13:15

To Dr. M. Ahkam Alwi, S.Psi., M.Psi Good morning, sir. Let me introduce myself, my name is Aloysia, a nursing lecturer at ITSK Soepraoen, Malang City. I'm currently in a sedan

M. AHKAM A, S.Psi, M.Si. UNM <m.ahkam.a@unm.ac.id> Thu, 21 Sept 2023, 15:52

to me

🗎 **Translate to English** ×

Please use it, sis

...

One attachment · Scanned by Gmail ⓘ

W scale adaptation...

Abstract in Korean

인도네시아 동부 자바 아동복지기관 청소년의 건강증진행위 :
구조모형

알로이시아 이스프리안타리
연세대학교 일반대학원 간호학과

아동 복지 기관에서 생활하는 청소년은 일반 가정의 청소년보다 더 건강 취약성에 직면하여 신체적, 사회적, 정신적 발달이 저해될 수 있다. 이러한 기관의 청소년들은 부적절한 시설, 보호자의 제한된 지원, 의료 서비스 접근성의 제한 등의 장애에 직면하여 건강증진행위(Health Promotion Behaviors)를 선택하는 데 어려움을 겪는다. 본 연구의 목적은 인도네시아 동부 자바의 아동복지기관에 거주하는 청소년의 건강진행위에 영향을 미치는 요인을 파악하고, 요인들의 인과관계를 설명하는 구조방정식 모델을 개발하여 평가하는 것이다.

이 연구는 다변량 구조분석을 위한 상관관계 설문조사로, 2024년 1월 14일부터 2024년 2월 3일까지 인도네시아 동부 자바 말랑시에서 실시되었다. 연구는 편의표본 추출을 이용하였으며, 6명의 연구 보조원의 도움으로 온라인 설문조사를 하였다. 변수는 건강증진행위, 건강증진행위에 대한 인지한 장애, 지각된 자기 효능감, 사회적 지원, 건강 문해력, 그리고 자존감이었다. 통계 분석은 IBM SPSS Statistics 26.0과 IBM AMOS 26.0을 이용하여 분석하였다. 본 연구는 인도네시아에서 윤리 승인(IRB)을 받았으며, 아동복지기관장의 서면 동의를 받았다. 또한 자료수집 전에 모든 참가자에게 동의를 얻었다.

인도네시아 동부 자바에 위치한 17개 아동복지기관에 거주하는 총 276명의 청소년이 이 연구에 참여하였다. 건강증진행위의 경로분석에서 지각된 자기효능감과 사회적 지원은 건강증진행위와 유의미한 양의 상관관계를 보였으며, 건강증진행위의 47.9%를 설명하였다. 건강 문해력, 자존감, 지각된 자기효능감은 지각된 행위 장애와 유의미한 음의 상관관계를 보였으며, 지각된 행위 장애의 18.8%를 설명하였다. 자존감과 사회적 지원은 지각된 자기효능감과 유의미한 양의 상관관계를 보였으며, 지각된 자기효능감의 32.8%를

설명하였다. 자존감만이 사회적 지원과 유의미한 양의 상관관계를 보였으며, 사회적 지원의 8.6%를 설명하였다.

건강증진행위의 경우, 지각된 자기효능감이 직접적인 영향을 미쳤고, 사회적 지원도 건강증진행위에 직간접적인 영향을 미쳤지만, 자존감은 건강증진행위에 간접적인 영향만 미쳤다. 자존감은 지각된 행위 장애에 직접적 및 간접적 영향을 모두 미쳤다. 건강 문해력과 지각된 자기효능감은 지각된 행동 장벽에 직접적인 영향을 미치는 반면, 사회적 지원은 지각된 행동 장벽에 간접적인 영향만 미쳤다. 자존감 또한 지각된 자기효능감에 직간접적인 영향을 미쳤으며, 사회적 지원은 지각된 자기효능감에만 직접적인 영향을 미쳤다. 사회적 지원의 경우 자존감만이 사회적 지원에 직접적인 영향을 미쳤다.

인도네시아 아동 복지 기관에 거주하는 청소년의 건강증진행위를 개선하고 유지하기 위한 간호 중재는 학교 환경 뿐아니라 거주 복지기관에서도 제공되어야 할 것이다. 아동복지기관을 통해 청소년뿐만 아니라 보호자, 아동복지기관에 거주하는 친구들도 이러한 건강증진 교육과 중재의 혜택을 받을 수 있도록 제공되어야 할 것이다.