

Relationship Between E-Health Literacy and Psychosocial Stress Levels in Adolescents

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Abstract

E-health literacy has positive and negative impacts. The positive impact of e-health literacy can be considered as a guardian of mental health, especially stress. While the negative impact is that the activity of seeking health information can lead to self-diagnosis which can have an impact on behavior, namely triggering anxiety and even stress. The purpose of this study was to determine the relationship between e-health literacy and the level of psychosocial stress in adolescents. The design used is descriptive correlation and cross sectional approach. The research sample was 276 adolescents using a stratified random sampling technique. The analysis used is the chi-square test. The results showed that there were 261 people with a good level of e-health literacy (94.6%), as many as 101 people had a moderate level of psychosocial stress (36.6%), based on statistical tests, there was no relationship between e-health literacy and stress levels. psychosocial in adolescents with p value (0.950) > alpha (0.05). Based on the results obtained, it is recommended for future researchers to intervene in adolescents who experience moderate or even severe psychosocial stress.

Keywords: e-Health Literacy, Adolescents, Psychosocial Stress



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INTRODUCTION

Technology is growing rapidly in the community (Ilham, 2022). In this era, all fields have been colored by the presence of increasingly developing technology, so that humans can reach a level which is called modern terms. With the presence of the internet and the various facilities provided by the internet, this is one clear proof of the existence of technology that is growing day by day (Romindo, 2020). The internet is an information and communication technology that has experienced rapid development until now, not only for sharing data but also for accessing social networks that are trending in society to obtain information quickly (Ameliola & Nugraha, 2013).

The results of the 2019-2020 survey conducted by the Association of Indonesian Internet Service Providers (APJII), found data that the number of internet users in Indonesia in 2019-2020 was 73.3% with a total of 196.71 million internet users with a population of 266.91 million souls. This figure shows that the number of internet users in Indonesia has increased by 25.54 million people from year to year, accounting for 171.17 million people. According to APJII, the number of internet users in Riau alone is 4,463,320 people, and the number of internet users in the city of Pekanbaru is 80%.

Bajcar et al., (2019) stated that around 75% of internet users in the world search for information on the web to diagnose health symptoms according to how they feel. In line with a survey conducted by Jamaludin et al., (2020) which shows that internet users in Indonesia use the internet to find health information. The many sources of health information on the internet must be balanced with literacy skills, especially digital health literacy skills (e-health literacy) for internet users.

E-health literacy is the ability to access, find, understand and interpret digital information related to health and apply the knowledge gained to solve various health problems (Seckin et al., 2016). Competence in e-health literacy can be determined by several factors, including: a person's ability to describe health problems, educational background, health status, motivation to seek information, and the technology used. These factors contribute to the goal of empowering people to participate fully in health decisions (Xesfingi & Vozikis, 2016).

Most users of e-health literacy are teenagers. This condition is supported by the fact that one in three internet users worldwide are under 18 years of age (UNICEF, 2017). Based on the Central Statistics Agency (2019) the number of teenagers in Indonesia aged 10-14 is 230 thousand people, while teenagers aged 15-19 are 229 thousand people. According to the World Health Organization (WHO) youth is a transitional phase from the childhood phase to the maturity phase from the ages of 10-19 years.

Adolescence is a period of transition or transition from childhood to maturity which is characterized by physical, hormonal, psychological, social and psychosocial changes (Batubara, 2010). One of the developmental changes experienced by adolescents that must be resolved is psychosocial development because if adolescents are unable to deal with conflict, adolescents will fall into risky behavior for various physical and psychosocial health problems (Azizah et al., 2018). The psychosocial problems include anxiety, depression and stress (Hawari, 2013).

The results of research by Azzahra et al., (2023) related to academic and non-academic stress levels in adolescents stated that 120 respondents (54.1%) had high academic stress levels, besides that the results showed that most adolescents had high non-academic stress levels, namely amounted to 116 respondents (52.3%). Adiwaty and Fitriyah (2015) state that non-academic stress is a problem related to adjustment to the environment, difficulties in self-development, and other personal problems. One of the non-academic stress experienced by adolescents is psychosocial stress. Cahyani (2019) says that psychosocial stress is stress caused by interactions with other people around them and psychosocial stress can also be caused by other social conditions such as life events that affect adolescents and cause acute stress in individuals. Based on previous research by Zola et al., (2021) in adolescents found that the majority of adolescents experienced moderate psychosocial stress (47.5%) where respondents who experienced environmental conditions were 51.5%, school environmental conditions were 37.6 %, the relationship factor with the people around was 49.5%, the unexpected event factor was 31.7% and the habit of 2% indicated psychosocial stress.

The impact of prolonged and poorly managed psychosocial stress or ineffective treatment can cause psychosocial disorders (Ginting, 2020). When it reaches the stage of psychosocial disorder, the individual experiences excessive anxiety, experiences severe depression, irrational hallucinations, changes in eating habits and sleeping habits and is usually abnormal, takes drugs for fun, deviant behavior, speaks slurred because of the chaos in his mind, withdraws. self-isolation and even having the desire to end one's life or commit suicide (Rusman et al., 2021).

Related to digital health literacy activities (e-health literacy) for adolescents can increase self-awareness to be able to access information about adolescent health behavior, increase knowledge and understanding of adolescents to maintain health and be able to identify potential problems in their mental health (Khairina et al., 2022). The positive impact of e-health literacy based on research by Bosanac & Luic (2021) states that well-developed e-health literacy from a psychological perspective can be considered a good coping strategy and is considered a guardian of mental health, especially stress.

The negative impacts that need to be avoided are if the individual's level of health literacy is poor, such as not being able to distinguish quality information from non-quality information, which can lead to poor self-management skills and can impact individual non-compliance with treatment and experience poor quality health resulting in expenses. greater treatment (Koster et al., 2015). Furthermore, the activity of seeking health information can also lead to an individual's tendency to self-diagnose (self-diagnosis). This is supported by the fact that around 75% of internet users in the world search for information on the web to diagnose health symptoms according to how they feel (Bajcar, Babiak, & Olchowska-Kotala, 2019). The negative impact of self-diagnosis, namely misdiagnosis, mishandling, can cause more serious health problems and have an impact on behavior, which can make individuals always worry or trigger anxiety and even stress and also think negatively of other people (Annury et al., 2022) .

According to the research results of Ditiarman et al., 2022 that out of 515 students, it was found that the majority of respondents had sufficient levels of health literacy (54.9), problematic (31.06), and inadequate (14.17). The majority of respondents were female (68%), with 49.3% aged 15-17 years, 4.5% aged less than 15 years, and 46.2% aged more than 17 years. The majority of respondents came from public high schools (79.4%). Most of them came from urban areas (85.2%). In addition, research conducted by Janitra et al., 2021 shows that adolescents actively use digital media and can understand information related to mental health. Based on the description above and previous research which is still limited so it needs to be researched, finally the researcher has the interest and interest to conduct research on "The Relationship of e-Health Literacy with Psychosocial Stress Levels in Adolescents at SMAN 8 Pekanbaru".

RESEARCH METHODS

This research was conducted at SMAN 8 Pekanbaru. This type of research is quantitative using a descriptive correlational research design with a cross sectional approach. The population in this study were all students of grades X and XI at SMAN 8 Pekanbaru, totaling 896 people. A sample of 276 people using stratified random sampling technique. The inclusion criteria for this research sample are students who are active students who are registered in the academic system and who are 14-18 years old. This study uses univariate and bivariate analysis. Bivariate analysis was used to determine the relationship between e-health literacy variables and psychosocial stress levels in adolescents. This study used the chi-square statistical test with a value of $\alpha = 0.05$.

RESEARCH RESULTS AND DISCUSSION

Research Result

Univariate Analysis

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics of Respondents	Total (n)	Percentage (%)
Age		
11-14 Years (Early Teen)	2	7
15-17 Years (Mid Teens)	269	97,5
18-20 Years (Late Youth)	5	1,8
Total	276	100
Gender		
Male	72	26,1
Female	204	73,9
Total	276	100

Class		
10	144	52,2
11	132	47,8
Total	276	100

Based on the data in table 1 above, the results for the age category of the most respondents were aged 15-17 years which were included in the middle adolescent category with a total of 269 people (97.5%), based on the sex of the most respondents, namely women with a total of 204 people (73.9%), and based on the highest class of respondents, namely class X with a total of 144 people (52.2%).

Table 2. Distribution of E-Health Literacy Levels

No	E-Health Literacy	Total (n)	Percentage (%)
1	Bad	15	5,4
2	Good	261	94,6
	Total	276	100

Based on the analysis of table 2, it can be seen that the majority of respondents have a good level of e-health literacy, namely 261 people (94.6%).

Table 3. Distribution of Psychosocial Stress Levels

No	Psychosocial Stress	Total (n)	Percentage (%)
1	Heavy	92	33,3
2	Currently	101	36,6
3	Light	83	30,1
	Total	276	100

Based on the analysis of table 3, it can be seen that the majority of respondents have a moderate level of psychosocial stress, namely 101 people (36.6%).

Bivariate Analysis

Table 4. Relationship between E-Health Literacy and Psychosocial Stress Levels in Adolescents

E-Health Literacy	Psychosocial Stress								P Value
	Heavy		Currently		Light		Total		
	N	%	N	%	N	%	N	%	
Bad	5	33,3	5	33,0	5	33,3	15	100	0,950
Good	87	33,3	96	36,8	78	29,9	261	100	
Total	92	33,3	101	36,6	83	30,1	276	100	

Table 4 shows that respondents who had a poor level of e-health literacy with a severe level of psychosocial stress were 5 people (33.3%), with a moderate level of psychosocial stress were 5 (33.3%) and with a mild level of psychosocial stress were 5 people (33.3%). Meanwhile, respondents who had a good level of e-health literacy with a severe level of psychosocial stress were 87 people (33.3%), with a moderate level of psychosocial stress were 96 people (36.8%), and with a mild level of psychosocial stress were 78 people. people (29.9%). Based on these data it can be seen that the highest percentage is a respondent with a good level of e-health literacy with a moderate level of psychosocial stress. Based on data analysis using the chi square test, a significance value of 0.950 was obtained. Based on this value, it means that the p value (0.950) > alpha (0.05) means that it can be concluded that H0 failed to be rejected, meaning that there is no relationship between e-health literacy and the level of psychosocial stress in adolescents at SMAN 8 Pekanbaru.

Discussion

Univariate Analysis

Age

The results of research conducted at SMAN 8 Pekanbaru showed that the characteristics based on the age of the most respondents were 15-17 years old (mid-teens) with a total of 269 respondents (97.5%). Based on the regulation of the Minister of Education and Culture (Permendikbud) Number 44 of 2019 article 5 paragraph 1 (a) regarding the requirements for prospective new students in grade 1 elementary school aged 7 years to 15 years, so that prospective new students in class X ritas have an age range of 15 or 16 year. This is in line with the results of Zola et al., (2021) research concerning the description of psychosocial stress showing that the majority of respondents were 16 years old (47.5%) where adolescents aged 16 were included in the middle adolescent phase. Age is a factor on the level of e-health literacy and psychosocial stress. Based on research by Lee et al., (2017) states that there is a significant relationship between the level of health literacy and the age range group, with the majority of respondents who have sufficient health literacy aged 15-17 years. Furthermore, age will also affect psychosocial stress. This is because adolescents will go through several phases or other stages of development and adolescence is a period of transition to adulthood (WHO, 2015).

Gender

The results of research conducted at SMAN 8 Pekanbaru showed that the characteristics based on gender of the respondents were mostly women with a total of 204 respondents (73.9%). In line with the results of interviews with student representatives and the curriculum (2023) which said that more students at SMAN 8 Pekanbaru are female than male. Where the number of female students is 832 people while the male students are 564 students. The results of this study are also in line with the results of Putri's research (2014) concerning the prevalence of psychosocial stress, it was found that the majority of respondents were female (56%) while the number was male (44%). Azizah et al., (2018) said that female adolescents are more likely to experience psychosocial problems than male adolescents. This is due to the influence of puberty factors on teenage girls and boys. Based on Christian research (2015) also stated that women tend to experience higher levels of stress than men, namely 50.3% and 4.9%.

Class

The results of research conducted at SMAN 8 Pekanbaru showed that the characteristics based on the class of the most respondents, namely class X, were 144 respondents (52.2%). This is in line with interviews conducted by researchers with student representatives and the curriculum of SMAN 8 Pekanbaru (2023) which states that the total number of class X students is 466 students. According to Safaria & Nofrans (2012) states that when individuals are faced with a new environment or environmental changes (stressful situations), they will carry out an initial assessment to determine the meaning of the incident. Class X students who are experiencing a transition from junior high school to high school need adjustment to environmental conditions. This is usually what makes students experience pressure and causes psychosocial stress.

E-Health Literacy

The results of research conducted at SMAN 8 Pekanbaru showed that the majority of students' e-health literacy level was good with a total of 261 (94.6%). The high level of health literacy in high school adolescents can be influenced by background and behavior, learning

activities, learning facilities and infrastructure, evaluation processes and the environment (Lam & Yang, 2014). Furthermore, urban middle school students such as students of SMAN 8 Pekanbaru are proven to have a better level of health literacy than students in rural areas. There are several studies showing differences in internet access in urban and rural areas to support the results obtained in this study. More high school students in urban areas have adequate health knowledge than those in rural areas (WHO, 2014). The results of this study are in line with the results of Prabowo's research (2020) on adolescents in big cities, namely in the Special Region of Yogyakarta, it was found that adolescents have good e-health literacy skills.

Psychosocial Stress

The results of research conducted at SMAN 8 Pekanbaru showed that the highest level of psychosocial stress in adolescents was moderate psychosocial stress with a total of 101 respondents (36.6%). Psychosocial stress can be interpreted as any social condition in the form of events that indirectly cause changes in a person's life that indirectly people will adapt and overcome the emergence of stressors (Harfiantoko & Kurnia, 2013). The results of this study are in line with the results of Cahyani's research (2016) that the majority of adolescent respondents experienced moderate levels of psychosocial stress. Furthermore, it is also in line with the results of Zola et al., (2021) research entitled description of psychosocial stress and the factors that influence it in adolescents, showing that the majority of adolescents experience moderate psychosocial stress, 48 respondents (47.5%). As for the several factors that influence psychosocial stress in adolescents, the majority are factors of the living environment (51.5%) and factors of the school environment (50.5%).

Bivariate Analysis

The relationship between e-health literacy and the level of psychosocial stress in adolescents

The results of this study indicate that there is no relationship between e-health literacy and the level of psychosocial stress in students at SMAN 8 Pekanbaru by finding a p value (0.976) > α (0.05) where H_0 fails to be rejected meaning there is no relationship between e-health literacy with levels of psychosocial stress. In this study the stress level of the respondents was not only influenced by the level of e-health literacy but also influenced by other factors where in this study it was found that respondents with a good level of e-health literacy, the majority of whom should have a mild level of psychosocial stress. However, these results show that respondents with a good level of e-health literacy have varying levels of psychosocial stress, as many as 87 respondents (33.3%) have psychosocial stress in the severe category, as many as 96 respondents (36.8%) have psychosocial stress with moderate category, and 78 respondents (29.9%) had psychosocial stress in the mild category.

These results indicate that a good level of e-health literacy does not show any relationship to the level of psychosocial stress experienced by adolescents. The results of this study are in line with the results of a study by Bolukbas et al. (2022) which found that there was no significant correlation between e-health literacy and stress. According to Putri (2014) which states that there are 2 factors that influence psychosocial stress in adolescents, which come from internal and external where internal factors are such as age, gender, level of education, personality and genetics. While external factors come from the neighborhood, school environment, family financial circumstances, relationships with people around, unexpected events and habits.

The results of this study are not in line with the results of the research by Bosanac & Luic (2021) which states that well-developed e-health literacy from a psychological perspective can be considered a good coping strategy and is considered a guardian of mental health, especially stress. Furthermore, the results of this study are also inconsistent with the results of Rudianto's research (2022) which states that health literacy skills in adolescents can be an effort to improve mental health including stress. Based on the description above, it can be concluded that the level of e-health literacy is not the only cause of the severity of psychosocial stress, so that in addition to e-health literacy, adolescents can optimize other factors that can reduce and overcome levels of psychosocial stress in adolescents.

CONCLUSION

The results of the study found that the majority of respondents were aged 15-17 years, which was the mid-adolescent phase, as many as 269 people (97.5%) and the majority of respondents were female, as many as 204 people (73.9%). The results of the research on the level of e-health literacy and the level of psychosocial stress in adolescents, most of the respondents had a good level of e-health literacy, 261 people (94.6%), while at the level of psychosocial stress, most of the respondents were in the medium category, 101 people (36.6%). The results of the chi-square test on the relationship between e-health literacy and the level of psychosocial stress in adolescents obtained a p value = 0.950 which indicated that there was no significant relationship between e-health literacy and the level of psychosocial stress in adolescents at SMAN 8 Pekanbaru.

BIBLIOGRAPHY

- Adiwaty, M. R., & Fitriyah, Z. (2015). Efektivitas strategi penyesuaian mahasiswa baru pada proses pembelajaran di perguruan tinggi. *Jurnal NeO-Biz*, (Vol.9). 87-97.
- Ameliola, S., & Nugraha. (2013). *Perkembangan Media Informasi dan Teknologi Terhadap Anak dalam Era Globalisasi*. Malang: Universitas Brawijaya.
- Annury, U. A., Yuliana, F., Suhadi, A. Z., & Karlina, C. S. (2022). Dampak Self Diagnose pada kondisi Mental Health Mahasiswa Universitas Negeri Surabaya. *Jurnal SNIIS*, Vol 1, 481-486.
- APJII, (2020). *Laporan Survey Internet APJII 2019-2020*. Asosiasi Penyelenggara Jasa Internet Indonesia, 1-146. <https://apjii.or.id/survey>.
- Azizah, U., Haryan, F., & Wahyuni, B. (2018). Faktor-faktor yang berhubungan dengan masalah psikososial remaja di wilayah Bantaran Kali Code Kota Yogyakarta. *Journal of Community Medicine and Public Health*, 34(7), 281-290.
- Azzahra, A., Wahyuni, S., & Arneliwati. (2023). Hubungan Stres Akademis dan Non Akademis terhadap perilaku Self Harm pada Mahasiswa Universitas Riau. *Jurnal Nurse*, 6 (1), 1-12.
- Bajchar, B., Babiak, J., & Olchowska-Kotala, A. (2019). Cyberchondria and Its Measurement. The polish Adaptation and Psychometric Properties of the Cyberchondria Severy Scale CSS-PI. *Psychiatr*, Vol 53 no 1, 49-50.
- Batubara, J. R. (2016). *Adolescent Development (Perkembangan Remaja)*. Sari Pediatri, 12(1),
- Bosanac, D., & Luic. (2021). Importance of Digital Literacy in the Process of Confronting the Stress During Covid-19 Pandemic. *Public Health and Informatics*, 1041-1045.
- Cahyani, I. R. (2016). *Hubungan Antara Status Stres Dengan Konsumsi Makanan Dan Status Gizi Ramaja*. Skripsi. Fakultas Kesehatan Masyarakat Universitas Jember.
- Ditiharman, F., Agsari, H., & Syakurah, R. A. (2022). Literasi Kesehatan dan Perilaku Mencari Informasi Kesehatan Internet pada Siswa Sekolah Menengah Atas. *Jurnal Kesehatan Masyarakat*, 6(1), 335-365.
- Ginting, H. (2020). *Copenhagen Psychosocial Questionnaire (Copsoq) III: Omnibus Survey*

- Faktor-faktor Psikososial di Tempat Kerja. Jakarta: Kencana.
- Harfiantoko, M. M. N dan Kurnia, E. (2013). Derajat Hipertensi Mempengaruhi Kualitas Tidur dan Stres Psikososial. *Jurnal STIKES*. Vol 6 (2).
- Hawari, Dadang (2013). *Stress, Cemas, dan Depresi*. Jakarta: FK UI.
- Ilham, M., Umamah, N., Fadilah, A., Alifni, F., Humam, M., Sulistianingrum, F., et al. (2022). *Kesadaran Runtuh Teknologi Bergemuruh*. Semarang: Cv. Alinea Media Dipantara.
- Jamaludin., Purba, R., Effendy, F., Muttaqin., Raynonto, M., Chamidah, D., et al. (2020). *Tren Teknologi Masa Depan*. Medan: Yayasan Kita Menulis.
- Janitra, P.A., Prihandini, P., & Aristi, N. (2021). Pemanfaatan Media Digital Dalam Pengelolaan Kesehatan Mental Remaja di Era Pandemi. *20(1)*, 18-23.
- Khairina, I., Susmiati., Nelwati., Rahman, D. (2022). Literasi Kesehatan Sebagai Upaya Peningkatan Perilaku Kesehatan Remaja. *Jurnal Akses Pengabdian Indonesia*, *7(1)*, 1-8.
- Koster, E. S., Philbert, D., & Bouvy, M. L. (2015). Health Literacy Among Pharmacy Visitors In The Netherlands. *Pharmacoepidemiology and drug Safety*, *24(7)*: 716-721.
- Lam, L. T., & Yang, L. (2014). Islow health literacy associated with overweight and obesity in adolescents: an epidemiology study in a 12-16 years old population, Nanning, China, 2012. *Archives of Public Health*, *72(1)*, 11.
- Lee, E. J., Lee, H. Y., & Chung, S. (2017). Age Differences in Health Literacy: Do Younger Korean Adults Have a Higher Level of Health Literacy than Older Korean Adults? *Health & Social Work, between health literacy, eHealth literacy, and health outcomes among patients with long-term conditions: A systematic review*. *European Psychologist*, *24(1)*, 68-81.
- Nasrani, L., et al. (2015). Perbedaan Tingkat Stres antara Laki-Laki dan Perempuan pada Peserta Yoga di Kota Denpasar. *Jurnal Psikologi*. Fakultas Kedokteran Universitas Udayana.
- Prabowo, F. W. (2020). Pengaruh Kemampuan Literasi E-Kesehatan Terhadap Perilaku Remaja di Daerah Istimewa Yogyakarta dalam Mematuhi Protokol Kesehatan di Tempat Ibadah Selama Pandemi Covid-19. Skripsi. UIN Sunan Kalijaga Yogyakarta.
- Putri, W. D. A. W. (2014). Prevalensi stres psikososial dan faktor-faktor yang mempengaruhi pada siswa-siswi kelas XII studi pendidikan IPA dan IPS SMAN 6 Denpasar. *E-Jurnal Medika Udayana*.
- Romindo., Niar, H., Sipayung, R., Julyanthry., Yendrianof, D., Pelu, M., et al. (2020). *Sistem Informasi Bisnis*. Medan: Yayasan Kita Menulis.
- Rudianto, Z. N. (2022). Pengetahuan Generasi Z Tentang Literasi Kesehatan dan Kesadaran Mental di Masa Pandemi. *Jurnal Pendidikan Kesehatan*, *11(1)*, 49-72.
- Rusman, A., Umar, F., & Majid, M. (2021). *Covid-19 dan Psikososial Masyarakat di Masa Pandemi*.Pekalongan: NEM.
- Safaria, T., & Nofrans, E. S. (2012). *Managemen Emosi: Sebuah panduan cerdas bagaimana mengelola emosi positif dalam hidup anda*. Jakarta: Bumi Aksara.
- Seckin, G., Yeatts, D., Hughes, S., Hudson, C., & Bell, V. (2016). Being an informed Consumer of Health Information and Assessment of Electronic Health Literacy in a National Sample of Internet Users: Validity and Reliability of the e-HLS Instrument. *Journal of Medical Internet Research*, *18(7)*, e161. <https://doi.org/10.2196/jmir.5496>.
- UNICEF. *State of the world Children 2017. Children in a Digital World*. Edited by Brian Keeley and Caline Little. Unicef: New York UNICEF.
- World Health Organization (WHO). (2015), 'Adolescent Development: Topics at Glance'.
- Xesfingi, S., & Vozikis, A. (2016). E-Health Literacy: In the Quest of the Contriburing Factors. *Interactive Journal of Medical Research*, *5(2)*, e4749. <https://doi.org/10.2196/ijmr.4749>.

Zola, N. I. R., Nauli, F. A., & Utami, G. T. (2021). Gambaran Stres Psikososial dan Faktor-Faktor yang Mempengaruhinya Pada Remaja. *Jurnal Keperawatan*, 6(1), 40–50.