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Disparities among The Baby Boomer, X, Y, And Z Generations regarding internet-based mental health literacy in Indonesia

Ayu Anulus[1)], Yolly Dahlia [1,2)], Danang Nur Adiwibawa [1,3)], Lilik Hidayati[4)]

[1)]Faculty of Medicine, Universitas Islam Al-Azhar, Nusa Tenggara Barat, Indonesia
[2)]RSJ Mutiara Sukma, Psychiatric Hospital, Nusa Tenggara Barat, Indonesia
[3)]Patuh Patut Patju Hospital, General Hospital, Nusa Tenggara Barat, Indonesia
[4)] Study Program of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Mataram, Nusa Tenggara Barat, Indonesia

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ABSTRACT

Background: Mental health literacy is important as the prevalence of mental health disorders increases, while access to information through digital media on the internet is becoming more widespread. With the different characteristics and patterns of internet consumption in each generation, the level of understanding of internet-based mental health information is expected to vary. This study aims to examine the differences in internet-based mental health literacy among the Baby Boomer, X, Y, and Z generations in Indonesia.
Subjects and Method: This study uses a cross-sectional study method with an online survey involving 400 respondents from various generation groups in Indonesia. The independent variables were Baby Boomer, X, Y, and Z generations. The dependent variable was internet-based mental health literacy. Generational difference data was measured using a questionnaire and internet-based mental health literacy understanding was measured using a modified internet-based health literacy scale (eHEALS) questionnaire. The data were analyzed using the Kruskal-Wallis Test and the Mann-Whitney as the post hoc test.
Results: The results of the study show that generation Z has a higher level of internet-based mental health literacy. The Kruskal-Wallis test shows that there is a statistically significant difference in internet-based mental health literacy between generations (p=0.025). The results of Mann-Whitney show that internet-based mental health literacy of baby boomers vs. generation X (p= 0.006) and baby boomers vs. generation Z (p=0.005) is significantly different.
Conclusion: There are significant differences in internet-based mental health literacy between generations. These findings emphasize the importance of an intergenerational approach to online mental health education programs, so that information can be accessed and understood properly by all age groups.

Keywords: health literacy, internet-based health education, mental health

Correspondence:
Ayu Anulus. Faculty of Medicine, Universitas Islam Al-Azhar. Jl. Unizar No.20, Turida, Sandubaya District, Mataram, Nusa Tenggara Barat, Indonesia. Email: anulusayu@gmail.com.

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BACKGROUND

Mental health is an important component of overall well-being, which includes emotional and social aspects in addition to physical health. Good mental health can be defined as a state of well-being that allows individuals to cope with normal life stressors and function productively (Fusar-Poli et al., 2020). Poor mental health can lead to substantial suffering, decreased quality of life, and increased mortality, resulting in significant economic and social costs (Bitanihirwe, 2014). Various factors, including socioeconomic pressures, violence, and discrimination, can negatively impact mental health. The stigma associated with mental illness often leads to it not being reported and acts as a barrier to seeking help. Mental health problems can manifest through symptoms such as depression, anxiety, and social distress (Setiawan and Setiawan, 2024). Dealing with mental health issues requires a multifaceted approach that involves communities, schools, and families. Investing in mental health resources and reducing stigma is an important step towards improving the well-being of society as a whole. In recent decades, awareness of the importance of mental health has increased, especially with the development of digital media that provides quick and easy access to related information. Social media platforms have proven effective for disseminating mental health information and conducting awareness-raising campaigns, reaching a wide audience quickly (Bitanihirwe, 2014; Latha et al., 2020; Setiawan & Setiawan, 2024). However, an individual's ability to find, understand, and utilize mental health information, known as mental health literacy, can vary greatly depending on demographic factors, including age and generation.

The digital revolution has created a significant difference in the adoption and use of technology across generations. Research shows that digital birth rates are increasing from Generation X to Generation Z, with younger generations showing higher comfort with multitasking and reliance on digital communication. Baby Boomers tend to prefer face-to-face communication, while Generations Y and Z are more adept at computer-mediated communication (Çoklar and Tatli, 2021; Venter, 2017). Each generation ranging from Baby Boomers, Generation X, Y (Millennials), to Z, has unique characteristics in terms of technology adoption and digital information consumption. Baby Boomers, who were born before the digital revolution, generally have limitations in terms of technology use and access to online information. Generation X, although more exposed to technology than Baby Boomers, tend to be more cautious in utilizing information from the internet. Meanwhile, Generations Y and Z, who grew up in the digital age, are more proficient in using technology and are more accustomed to using the internet to seek information, including about mental health. Research on generational differences in technology use reveals patterns that vary among Baby Boomers, Generation X, Y, and Z. While some studies have not found significant generational differences in the integration of technology for online education (Culp-Roche et al., 2020; Özparlak et al., 2023; Papp-Zipernovszky et al., 2021; Xu et al., 2023).

This difference gives rise to the hypothesis that mental health literacy based on the internet will vary among these generation groups. The younger generation is estimated to have better ability to access and utilize online mental health information compared to the older generation.

However, on the other hand, increased access to technology is not always accompanied by a critical ability to filter accurate and trustworthy information. Understanding these generational differences is essential for effective communication and education in the digital age (Venter, 2017).

Although access to mental health information through digital media is becoming wider, there have not been many studies that explore how generational differences affect mental health literacy based on the internet. Therefore, this study aims to analyze the disparity between generations related to internet-based mental health literacy in Indonesia.

SUBJECTS AND METHOD

1. Study Design

A cross-sectional study was carried out by online surveys that are widely shared with respondents through social media such as Facebook, WhatsApp, Instagram, and Tiktok until they reach a representative number of respondents. The questionnaire distributed for the survey consisted of respondent characteristics (gender, age, last education, and occupation). The generation questionnaire was divided into four choices, namely Baby Boomers (1946–1964), Generation X (1965–1979), Generation Y (1980–1994), and Generation Z (1995–2009).

2. Population and Sample

This study calculates the number of samples referring to the population in the results of the 2023 survey of the Indonesian Internet Service Providers Association (APJII), which is 215,000,000 internet users in Indonesia. The number of research respondents was calculated using the Slovin formula with a confidence interval of 95% so that a total of 400 representative internet users in Indonesia were obtained. The sampling technique used is snowball-non-random-sampling.

3. Study Variables

The independent variables are Generation Baby Boomers, Generation X, Generation Y, and Generation Z. The dependent variable is internet-based mental health literacy.

4. Operational Definition of Variables

The Baby Boomers generation is individuals born in the 1946–1964 range. Generation X is an individual born in the period 1965–1979.

Generation Y is individuals born in the 1980-1994 range, and Generation Z is individuals born in the 1995-2009 range.

Internet-based mental health literacy is the use of digital technologies and online platforms to increase an individual's knowledge, awareness, and understanding of mental health. It includes information about mental health conditions, how to manage stress, depression, anxiety, as well as techniques to maintain general mental well-being. With easier and wider access, the internet is an important tool to provide education to the public about mental health issues.

5. Study Instruments

The instrument was distributed in the form of a Google Form and shared online. Generation-related data was measured categorically using a questionnaire. Internet-based mental health literacy is measured using the modified internet-based health literacy scale (eHEALS).

6. Data analysis

Continuous data was analyzed descriptively to obtain mean, SD, minimum, and maximum values. Categorical data is displayed in the form of a histogram. Generational difference data on internet-based mental health literacy was analyzed using Kruskal-Wallis because Oneway ANOVA was not eligible. The Mann-Whitney test was conducted to compare the differences between the two groups.

7. Research Ethics

A letter of feasibility for research ethics has been issued by the medical and health research ethics committee, Faculty of Medicine, Universitas Islam Al-Azhar, Mataram with number: 133/EC-03/FK-06/UNIZAR/IX/2024.

RESULTS

1. Sample Characteristics

Of the total 485 respondents who participated in the survey, a small number were excluded from further analysis due to specific issues. One respondent explicitly declined to be involved in the research, and four respondents provided unclear or incomplete responses regarding their age and place of origin (city or province), making their data unsuitable for analysis. Additionally, six responses were identified as duplicates, which could potentially bias the results if included. After these exclusions, a total of 474 valid responses remained, which were eligible for the next step of the research process.

To ensure a fair and unbiased selection, the 474 valid responses were subjected to a random selection process using the Random Number Generation function in Microsoft Excel. This method allowed for the randomization of the dataset, ensuring that the final sample was representative and not influenced by researcher bias. From this randomized pool, 400 responses were selected for further analysis. Prior to analysis, all personal information associated with these responses was removed to maintain the anonymity and confidentiality of the participants, in accordance with ethical research practices. These 400 anonymized data entries were then ready for the next stage of the research analysis.

Table 1. Sample characteristics of respondents (N=400) (continous data)

Variables	Mean	SD	Min.	Max.
Age	39	0.82	149	16
Year's birth	1985	0.68	1875	2008

Table 2. Sample characteristics of respondents (N=400) (categorical data)

Variables		Frequency (n)	Percentage (%)
Gender	Man	199	49.8
	Woman	201	50.3
Generation	Baby boomers	26	6.5
	Generation X	115	28.8
	Generation Y	122	30.5
	Generation Z	137	34.3
Internet usage	<4 Hours	76	19.0
	>6 hours	99	24.8
	4-6 hours	225	56.3
Provincial Origin	Aceh	8	2
	Bali	10	2.5
	Banten	15	3.75
	Bengkulu	2	0.5
	DIY Yogyakarta	12	3
	DKI Jakarta	74	18.5
	Gorontalo	2	0.5
	Jambi	6	1.5
	West Java	80	20

Variables		Frequency (n)	Percentage (%)
	Central Java	45	11.25
	East Java	51	12.75
	West Kalimantan	4	1
	South Kalimantan	3	0.75
	Central Kalimantan	1	0.25
	East Kalimantan	3	0.75
	North Kalimantan	2	0.5
	Bangka Belitung Islands	1	0.25
	Riau Islands	1	0.25
	Lampung	7	1.75
	Maluku	1	0.25
	Nusa Tenggara Barat	27	6.75
	East Nusa Tenggara	1	0.25
	Papua	2	0.5
	West Papua	1	0.25
	Southwest Papua	1	0.25
	South Papua	1	0.25
	Central Papua	1	0.25
	Riau	6	1.5
	West Sulawesi	1	0.25
	South Sulawesi	5	1.25
	Central Sulawesi	1	0.25
	Southeast Sulawesi	5	1.25
	North Sulawesi	2	0.5
	West Sumatra	4	1
	South Sumatra	7	1.75
	North Sumatra	7	1.75

Table 3. Internet-based mental health literacy among respondents (N=400)

Internet-based mental health literacy questionnaire items	Category	n	%
I know how to find mental health-related resources on the internet	Not Sure	48	12.0
	Strongly Agree	128	32.0
	Strongly disagree	9	2.3
	Agree	195	48.8
	Disagree	20	5.0
I know how to use the internet to answer my questions related to mental health	Not Sure	65	16.3
	Strongly Agree	104	26.0
	Strongly disagree	34	8.5
	Agree	171	42.8
	Disagree	26	6.5
I know that mental health information is available on the internet	Not Sure	43	10.8
	Strongly Agree	123	30.8
	Strongly disagree	14	3.5
	Agree	177	44.3
	Disagree	43	10.8
I know where to access mental health resources on the internet	Not Sure	98	24.5
	Strongly Agree	102	25.5
	Strongly disagree	9	2.3
	Agree	158	39.5
	Disagree	33	8.3
I know how to use mental health-related	Not Sure	72	18.0

Internet-based mental health literacy questionnaire items	Category	n	%
information from the Internet and use it to help with my problems	Strongly Agree	103	25.8
	Strongly disagree	8	2.0
	Agree	186	46.5
	Disagree	31	7.8
I have the ability to select and sort health information from the internet	Not Sure	74	18.5
	Strongly Agree	108	27.0
	Strongly disagree	7	1.8
	Agree	173	43.3
	Disagree	38	9.5
I can find out the quality of mental health information from the internet	Not Sure	91	22.8
	Strongly Agree	93	23.3
	Strongly disagree	8	2.0
	Agree	179	44.8
	Disagree	29	7.3
I feel confident using information from the internet in making decisions related to my mental problems	Not Sure	70	17.5
	Strongly Agree	94	23.5
	Strongly disagree	8	2.0
	Agree	192	48.0
	Disagree	36	9.0

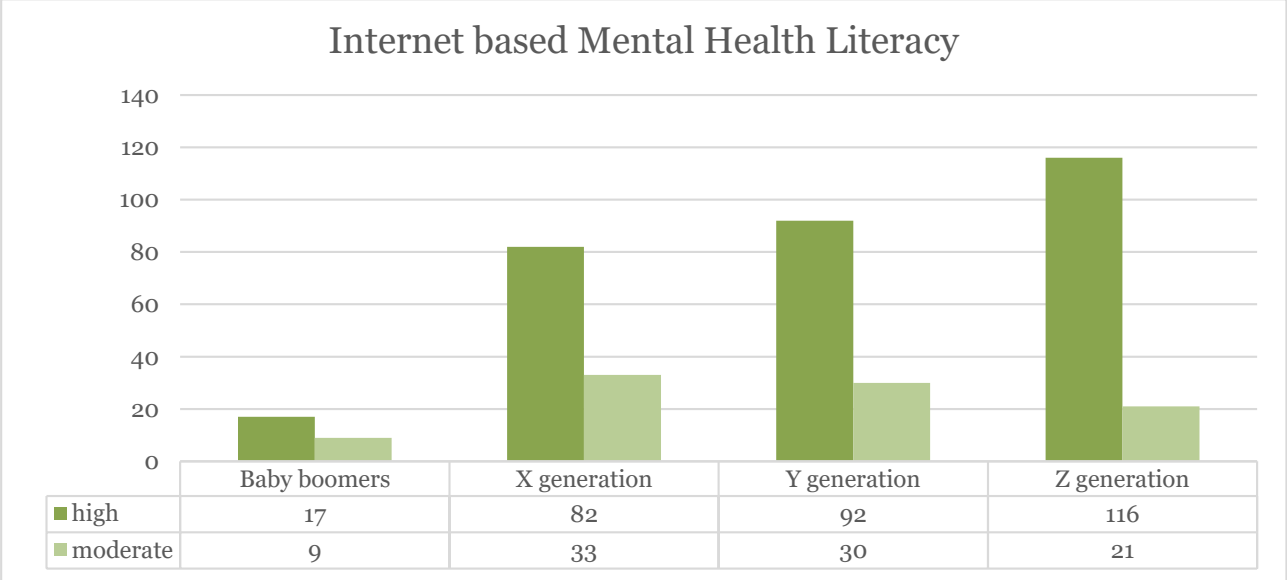

Figure 1. Internet-based mental health literacy in different generations (N=400)

In this study, out of a total of 400 respondents, it was known that many of the respondents involved were women, generation Z, using the internet for 4-6 hours, coming from West Java, undergraduate education, and working as self-employed employees. Data reports that the generation with high internet-based mental health literacy is Generation Z which is then followed by Generation Y, X, and baby boomer.

Table 4. Cross-tabulation of gender, education, and occupation based on generational differences (N=400)

Characteristic		Baby boomers		Generation X		Generation Y		Generation Z		N	%
		n	%	n	%	n	%	n	%		
Gender	Man	11	2.75	67	16.75	65	16.25	56	14.00	199	49.75
	Woman	15	3.75	48	12.00	57	14.25	81	20.25	201	50.25
Highest education (graduates)	Diploma	0	0.00	16	4.00	32	8.00	14	3.50	62	15.50
	Bachelor's degree	19	4.75	62	15.50	58	14.50	73	18.25	212	53.00
	Master's degree	3	0.75	10	2.50	15	3.75	6	1.50	34	8.50
	Doctoral degree	4	1.00	2	0.50	1	0.25	0	0.00	7	1.75
	Elementary	0	0.00	1	0.25	0	0.00	0	0.00	1	0.25
	High school	0	0.00	22	5.50	14	3.50	44	11.00	80	20.00
	Junior high school	0	0.00	2	0.50	2	0.50	0	0.00	4	1.00
Work	Advocate	0	0.00	1	0.25	0	0.00	0	0.00	1	0.25
	Lecturer	0	0.00	0	0.00	0	0.00	1	0.25	1	0.25
	Editor	0	0.00	0	0.00	1	0.25	0	0.00	1	0.25
	Freelancer	0	0.00	0	0.00	0	0.00	2	0.50	2	0.50
	Student	0	0.00	0	0.00	1	0.25	40	10.00	41	10.25
	Civil servants	0	0.00	21	5.25	17	4.25	17	4.25	55	13.75
	Private employees	1	0.25	44	11.00	45	11.25	43	10.75	133	33.25
	Teacher	1	0.25	18	4.50	26	6.50	13	3.25	58	14.50
	Businessman	0	0.00	1	0.25	0	0.00	0	0.00	1	0.25
	Pensioner	21	5.25	8	2.00	1	0.25	0	0.00	30	7.50
	PPNPN	0	0.00	1	0.25	0	0.00	0	0.00	1	0.25
	Health workers	0	0.00	9	2.25	19	4.75	18	4.50	46	11.50
	Not working	1	0.25	8	2.00	4	1.00	1	0.25	14	3.50
	Police/army	0	0.00	3	0.75	8	2.00	2	0.50	13	3.25
	Self employed	2	0.50	1	0.25	0	0.00	0	0.00	3	0.75

1. Bivariate Analysis

Oneway ANOVA is not eligible because of homogeneous data ($p<0.001$) so the Kruskal-Wallis Test was used and a result of $p=0.025$ was obtained which showed that there was a statistically significant difference in internet-based mental health literacy between generations. Therefore, a post-hoc test was carried out, namely Mann-Whitney with the assumption that $p=0.05$ divided into 6 groups so that $p<0.008$ was declared significantly different. The results of the post-hoc test showed that internet-based mental health literacy of baby boomers vs. generation X ($p=0.006$), baby boomers vs. generation Z ($p=0.005$) was statistically significantly different. But baby boomers vs. Generation Y ($p=0.043$), Generation X vs. generation Y ($p=0.288$), Generation X vs. generation Z ($p=0.979$), and Generation Y vs. generation Z ($p=0.277$) were not statistically different.

Table 5. The results of Kruskal-Wallis

Internet based Mental Health Literacy	Generations	n	Mean	df	p
	Baby boomers	26	243.62	1.47	0.025
	Generation X	115	193.78	2.50	
	Generation Y	122	204.90	2.52	
	Generation Z	137	194.04	2.48	

Table 6. The result of Mann-Whitney (post-hoc)

Internet based Mental Health Literacy	Generations	n	Mean	SD	p
	Baby boomers	26	85.33	1.45	0.006
	Generation X	115	67.76	1.41	
	Baby boomers	26	86.31	2.46	0.043
	Generation Y	122	71.98	2.35	
	Baby boomers	26	98.98	1.78	0.005
	Generation Z	137	78.78	1.45	
	Generation X	115	115.61	2.23	0.288
	Generation Y	122	122.20	2.14	
	Generation X	115	126.41	1.23	0.979
	Generation Z	137	126.57	1.33	
	Generation Y	122	133.72	2.28	0.277
	Generation Z	137	126.69	2.56	

DISCUSSION

The results of this study reveal that there is a significant difference in online mental health literacy among the Baby Boomer, X, Y, and Z generations in Indonesia. Generation Y and Generation Z show higher literacy levels compared to Generation X and Baby Boomers, especially in terms of access and understanding of mental health information through digital platforms. These findings are in line with initial expectations, considering that Generation Y and Z are growing up in the digital era, where the internet is the main source of information, including regarding mental health. Baby Boomer and Generation X, although some have begun to take advantage of digital technology, tend to have limitations in technical skills and trust in online information. This factor can be attributed to the relatively lower exposure to digital technologies during their developmental phases, as well as the tendency to rely more on traditional sources of information, such as print media or television. They may be more skeptical of online sources due to concerns about the validity of information on the internet, especially when it comes to sensitive topics such as mental health. Health literacy among baby boomers is an important field of study because this generation is aging and becoming high users of health services. Research shows that sociodemographic factors, especially education levels, can predict health literacy. While baby boomers are increasingly using the internet for health information, their eHealth literacy skills may vary greatly (Harbour & Grealish, 2018; Sudbury-Riley et al., 2017; Tennant et al., 2015).

In contrast, Generations Y and Z showed better ability to find and use mental health information online. The higher digital skills in this group make it easier for them to navigate various information platforms, such as blogs, apps, and social media, which are often the main source of mental health information for them. However, this high level of digital literacy also brings new challenges, namely how to filter

valid information from the large amount of content available online. Although Generation Y and Z have greater access, the ability to assess the credibility of information is not necessarily evenly distributed across these groups.

Baby boomers have a strong incentive to improve their eHealth literacy since they use the Internet to look for health information almost as frequently as younger generations do. Given that older generations are the most able to apply information in decision-making and that their subjective health status is influenced by their eHealth literacy, we believe it is imperative that Hungarian health promotion programs take advantage of this high frequency of Internet health information seeking. Previous research has shown intergenerational differences in health literacy between Baby Boomers, Generation X, Generation Y, and Generation Z. Younger generations generally show higher eHealth literacy scores, while older adults face greater challenges in accessing and using eHealth tools (Paige et al., 2018; Papp-Zipernovszky et al., 2021). However, Baby Boomers reported higher empowerment of health information despite lower eHealth literacy (Papp-Zipernovszky et al., 2021). A study in Turkey found that 75% of Generation Z and 33.1% of Generation X have low to marginal levels of health literacy (Muslu et al., 2021). Overall, understanding gene-rational differences in health literacy is critical to developing targeted interventions and improving access to and utilization of health services.

These findings have important implications for the development of online mental health literacy programs in Indonesia. Governments and health organizations need to consider diverse approaches that suit the needs of each generation. For Baby Boomer and Generation X, a more traditional but technology-adapted approach is needed, such as counseling that combines digital and non-digital media, as well as increasing their trust in online information through credible sources. Meanwhile, for Generation Y and Z, efforts need to be focused on improving critical literacy, namely the ability to assess the credibility of information and avoid misinformation related to mental health.

Overall, the results of this study underscore the importance of an intergenerational approach in online mental health education. Each generation has different needs and challenges in accessing and utilizing mental health information, so inclusive and responsive literacy programs are essential to achieve equal access and understanding of mental health across all age groups in Indonesia.

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AUTHOR CONTRIBUTION

The design, execution, data analysis, and interpretation of this study have all benefited greatly from the contributions of all authors. In order to guarantee the integrity and correctness of the results provided, they have also actively engaged in the drafting, revision, and finalization of this paper.

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CONFLICT OF INTEREST

There is no conflict of interest in this study.

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