



Research article

Gender, education, and digital generations as determinants of attitudes toward health information for health workers in West Java, Indonesia

Susanne Dida^{a,*}, Hanny Hafiar^b, Anissa Lestari Kadiyono^c, Syauqy Lukman^{b,d}^a Universitas Padjadjaran, Center of Health Communication Studies, Bandung, Indonesia^b Universitas Padjadjaran, Faculty of Communication Science, Bandung, Indonesia^c Universitas Padjadjaran, Faculty of Psychology, Bandung, Indonesia^d Australian National University, School of Demography, Australia

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ABSTRACT

Health information is a commodity heavily sought by Indonesians because of the increasing consciousness of a healthy lifestyle. However, the circulation of health information is consistently disrupted by misinformation and disinformation, particularly on social media and chatting platforms such as WhatsApp. Identified misinformation and disinformation can be found on the official web page run by the Ministry of Communication and Information (<https://trustpositif.kominfo.go.id/>). Digital information exchange often involves health care workers; they are considered a credible source of health information. The purpose of this study was to delineate the attitudes of health care workers toward health information, determined by gender, educational attainment, and age differences. Health information in this study was information circulated on WhatsApp. We divided the age differences into four digital generations: baby boomers and Generations X, Y, and Z. We used the t-test and analysis of education and age differences when using the analysis of variance to demonstrate the differences among determinants factors of respondents—617 health care workers in West Java—in using WhatsApp when receiving and sharing health information. The results support that attitudes toward health information are determined by education attainment and differences in generation and that gender differences have no effect.

1. Introduction

Health is integral to daily life, and health information literacy is paramount in this age of information (Prasanti, 2018). Thus, the dissemination of health care information is becoming a ubiquitous necessity (Marriott et al., 2000). However, some individuals are not well informed on the health-related information that promotes healthy behavior. Individuals have various types of health information, based on their lifestyles and ailments. Health information is commonly categorized by the type of information: promotive, preventive, curative, and rehabilitative. For example, individuals with ailments would search for curative information, and those receiving health treatment would search for rehabilitative information.

Related to the dissemination of health information, the advent of communication and information technology—particularly online platforms—offers new sources of and methods for searching for health information. The availability of online health information offers flexibility in selecting the amount and types of information required, anytime and

anywhere. Individuals no longer must wait for a particular broadcast time of a health show or an health article to be published. All the necessary information is moments away when using the internet. Such flexibility is not exclusive to consumers of information, it also applies to creators of information. Individuals exploit technological developments, such as social media, to create and disseminate information, including health information, often found on various platforms. Additionally, health care workers are involved with the flow of health information on social media, particularly within WhatsApp (WA).

An important caveat of communicating information using media is the bias of media framing (Adekunle and Adnan, 2016). Health information framing is prone to disinformation and misinformation, particularly when delivered through social media platforms (Allcott et al., 2019). In Indonesia, misinformation and disinformation on social media cause negative impacts (Nurhayati and Suryadi, 2017). To avoid these problems, the community must be sufficiently information literate to choose credible, reliable information over the less credible, unreliable information.

* Corresponding author.

E-mail address: susanne.dida@unpad.ac.id (S. Dida).

Occupation is a factor in assessing information sources. This statement is consistent with public opinion that the occupation and knowledge of the author of the source of information represent the reliability and credibility of that information (Shen and Li, 2011). Because of their profession, the public considers health care workers to be credible sources of health information. In Indonesia, some individuals who hold strong customary values visit traditional healers instead of or in addition to doctors, nurses, and pharmacists (Erвина and Ayubi, 2018). Notably, some of these traditional healers have insufficient medical competencies and circulate inaccurate health information. Health information is available on social media platforms, and many discussions on health are held online. Discussions may escalate when a source of information is being questioned or criticized by the online public, particularly when it is non-expert opinion.

Health information circulated by health care workers is supposed to provide knowledge and understanding related to health topics, not confusion by misleading the public. When health care workers circulate information, they have professional and institutional responsibility and are expected to proportionally respond to the health information they receive and confirm its reliability.

Attitudes toward information are shaped by several determinants; in this study, we focus on differences in gender, educational attainment, and age. The purpose of this study is to delineate the attitudes of health care workers toward health information, determined by gender, educational attainment, and age differences. For convenience, we limit the health information to that circulated on WA. We divide the participants by age into four digital generations: baby boomers and Generations X, Y, and Z (further explained in the literature review).

2. Literature review

2.1. Health information on social media

The increasing amount of health information circulated on various online media indicates the high need for this information by the public. Social media is one of the online platforms that circulates health information among people, chat groups, and other groups. Social media has been criticized as a platform that is often abused to spread misinformation on health; by contrast, it is also a corrective channel for correcting false information (Bode and Vraga, 2017). Often, a member of a WA group corrects health information posted by another member, assessing its reliability. Unfortunately, this circumstance often results in counterproductive arguments between members.

Vague information and the abundance of information on social media often trigger confusion in receiving health information. This problem calls for educating the public on distinguishing credible and false health information. Because social media makes the circulation of health information easy for consumers and creators, oftentimes, it is exploited to spread misinformation and disinformation. Notably, social media platforms, for example, WA, are susceptible to posts with misinformation and disinformation.

WA is the most widely used chatting application in Indonesia. This platform spreads misinformation and disinformation because users post them to steer public opinion or are misinformed themselves. Once posted, users can instantly share these posts with other users, and no proper checking and rechecking of its quality and source is required.

WA features allow users to easily share information received from other users. Studies on the spread of misinformation and disinformation through WA have explored this topic in relation to digital literacy (Cahyani, 2019) and how WA is related to exposure to false or unregulated information or media content (Ahad and Lim, 2014). Thus, the receipt of health information should be further researched, especially in health care workers, because the public considers them as credible sources.

2.2. Attitude toward health information

Attitude is a “favorable or unfavorable evaluative reaction toward something or someone, often rooted in one's belief and exhibited in one's feeling and intended behavior” (Myers and Twenge, 2016). Thus, we can conclude that attitudes toward health information are evaluative reactions to health information. The concept of developing an attitude toward health information through WA in this study is divided into three dimensions: affection, perceived usefulness, and perceived control (Tsai and Lin, 2004). These dimensions elaborate attitudes toward health information on basis of the concept of attitudes toward the internet, because WA is involved in internet connectivity (Jisha & Jebakumar, 2014).

The indicators for the attitude toward health information dimensions in this study are derived from the concept of health information-seeking behavior (HISB), a complex concept that explains health promotion and the psychological state of individuals related to medical conditions (Zimmerman & Shaw jr, 2019). HISB in a broader sense is viewed as how individuals obtain information on health, disease, health promotion, and risks to health (Lambert and Loissele, 2007; Gavvani et al., 2013).

2.3. Gender, education, and digital generation as determinants of attitude toward health information

The literature has studied the relationship among gender, education, and attitudes. One study mentioned that gender is a predictor of attitudes toward information and communication technologies (Guillén-Gómez and Mayorga-Fernández, 2020). Another study examined the experiences of digital health care and stated that second-generation digital natives have varied reasons to search for information online (Covey and Potts, 2018). Another study investigated the understanding of graphic formats that present information on health risks and used the control variables gender and education level (van Weert et al., 2020).

The literature on health care workers related to technology-based health information has provided results on the use of health information technology in terms of the readiness of pharmacy students as prospective professionals in the health sector (R. J. Jacobs, Caballero, Parmar and Kane, 2019), nurses (Drexler, 2020), responsible use of information and communication technology in health professional practice (Muñoz Fernández, Díaz García and Gallego Riestra, 2020), and health information on social media and its implications for health professionals (Sommariva et al., 2018).

Health information on social media affects health professionals. One study stated that other comments and information on social media influenced opinions on diagnosing and curing diseases. In many cases, this phenomenon affects medical professionals, who must defend their diagnoses and proposed treatments to patients with insufficient or inaccurate information (Lara-Navarra et al., 2020).

These studies have applied various theories and concepts as references and several different methods to reveal experiences, attitudes, or behaviors associated with demographics, including individual beliefs. Many variables would affect individual beliefs, for example, age, gender, ethnicity, social economic status, education attainment, nationality, religious affiliation, personality, mood, emotion, attitudes, general values, intelligence, group membership, experience, information exposure, social support, and coping skills (Fishbein and Ajzen, 2005). This study focuses on differences in age, gender, educational attainment.

This study categorizes age differences by referring to the digital generation classification. We hypothesize that baby boomers and Generations X, Y, and Z act differently in accepting and re-sharing health information. We also refer to the literature that has compared the influence of the media on baby boomers and millennials (Towner and Munoz, 2016) and focused on technology acceptance across different generations (Linnes and Metcalf, 2017).

The generations and the range of years in which their members are born are as follows: baby boomers, 1946–1964; Generation X, 1965–1980; Generation Y, or millennials, 1981–1996; and Generation Z, or post-millennials, 1997–2012 (Fry and Parker, 2018). This study uses the same categories, except for Generation Z, which we define as individuals born after 1997.

2.4. Research question and hypothesis

Based on the explanation, the primary concept for this study is the variable of attitude toward health information. Attitudes are individual disposition in reacting favorable or unfavorable in certain level toward an object, behavior, other individuals, organization, or event (Ajzen, 1993). Attitude can also be stated as “favorable or unfavorable evaluative reaction toward something or someone, often rooted in one’s belief and exhibited in one’s feeling and intended behavior” (Myers and Twenge, 2016).

The dimensions that explain attitudes toward health information refer to attitudes regarding the internet, including affection, perceived usefulness, and perceived control (Tsai and Lin, 2004). As aforementioned, the indicators of attitude toward health information refers to HISB in the context of how individuals with ailments cope with such situations that threaten health; participation and involvement in medical decision-making; and behavior change and preventive behavior related to health (Lambert and Loisel, 2007).

The purpose of this study is to ascertain whether there is an effect of gender differences, education attainment, and digital generation on the attitudes toward health information from health care workers. The research hypothesis is as follows:

HA: Differences in gender, education, and digital generation are statistically significant to affect attitudes toward health information from health care workers.

3. Method

3.1. Procedures

This study used an online survey distributed to health practitioners by using a Google form. Ethical approval was secured from the Research Ethics Committee of Padjadjaran University as was Data Protection approval (ID: 1068/UN6.KEP/EC/2020). Informed consent was displayed at the beginning of the form, which explained that participating in the survey demonstrated their consent to the use of the data provided on the questionnaire. The information contained in the informed consent was, for example, the research objectives, types of data necessary, consequences of respondent participation, commitment to confidentiality, implementation of data processing procedures, research benefits, potential problems, benefits, and contact person.

3.2. Instruments

The instrument contained 17 items that measure the attitude toward health information on WA and was developed by Tsai et al. (2001). These items were divided into subscales: affection (6 items), perceived usefulness (6 items), and perceived control (5 items). Examples of the types of questions on the questionnaire are as follows: (1) The affection subscale assessed health care workers’ feelings and anxiety regarding receiving and sharing health information on WA, such as “I am fearful to relay health information received from WA without an appropriate information source.” (2) The Perceived Usefulness subscale measured how health care workers perceive the use and benefit of health information circulated on WA, such as “My work as a health care worker is aided with the circulation of health information in WA.” (3) The Perceived Control Subscales measured how health care workers perceived their ability to control the health information circulated on WA, such as “I can control

good information and hoaxes circulated on WA.” Responses to these 17 statements are scaled by using a Likert-type scale, with responses ranging from 1 to 5, with 1 indicating *strong agreement* and 5 indicating *strong disagreement*.

3.3. Validity and reliability

Validity and reliability testing were conducted to 30 respondents excluded from the study sample. Pearson item correlation was utilized for validity testing, and the reliability of internal consistency was measured by calculating the value of Cronbach’s alpha, which should be equal to and above 0.6 (Malhotra et al., 2012). The value of Cronbach’s alpha of the measures of attitudes toward health information was 0.77, indicating good reliability and good internal consistency of the questionnaire; thus, it was satisfactory for further analysis.

3.4. Participants

The study sample comprised 617 respondents who identified themselves as health care workers with direct and indirect association with the public health office in West Java, Indonesia. The occupations represented in the sample were doctor, nurse, pharmacist, midwife, nutritionist, public health expert, environmental health expert, medical lab expert, and other health service employees considered by the public as on the frontline in disseminating valid, reliable health information. The sampling frame that we adopted in determining the eligible participants for this survey was non-probability sampling (purposive sampling). We calculated the sample size by using the following formula:

$$n = \frac{Z^2 \times p \times (1 - p)}{d^2}$$

where $z = 1.96$, $d = 0.05$, and the confidence interval is 0.05. The sample proportion was assumed to be 0.5 because this value provided the maximum sample size. Hence, the required sample size was 384. However, 617 respondents completed the survey, and all were included in the final analysis (Yeasmin et al., 2020). Table 1 provides the descriptive statistics of the respondents.

The proportion of female respondents was larger than that of the male respondents. Thus, we had to use caution in the statistical analysis, particularly for the t-test on gender differences. In terms of educational attainment, the number of doctoral respondents was the fewest and disproportionate compared with the respondents with other educational levels. Disproportionate representation of the digital generation was also observed, with baby boomers being underrepresented. This issue also requires using caution in the statistical analysis of education and age differences when using the analysis of variance (ANOVA) technique. To address the issue of disproportionality in the sample groups, Levene’s robust test statistic for the equality of variances between groups was used (Table 2).

As shown in Table 2, all the tests of the attitude toward health information components by gender, education, and digital generation are not statistically significant ($p > 0.05$). We accept the null hypotheses for all tests that all the groups of attitudes toward health information and their components have equal population variances by gender, education, and digital generation.

3.5. Data analysis

Univariate and bivariate techniques were used to analyze the data, with the help of STATA statistical software. To explore the differences in gender as determinants of attitudes toward health information, a t-test was conducted, and an ANOVA was conducted to explore differences in educational attainment and digital generation as determinants of attitudes toward health information. We use the ANOVA because its applicable to delineating means by using Likert-type scale, referring to the

Table 1. Demographics (N = 617).

Variables	Category	Frequency	Percentage
Gender	Men	146	23.6
	Women	471	76.4
Highest Education Attainment	Junior or Senior High	122	19.7
	Diploma	72	11.6
	Bachelor	258	41.8
	Master	149	24.1
	Doctoral	16	2.6
Digital Generation	Baby boomers	48	7.7
	Generation X	209	33.8
	Generation Y	206	33.3
	Generation Z	154	24.9

Source: research survey

Table 2. Test of homogeneity of variances.

Categories	Levene's Statistics	df1	df2	Sig.
By Gender				
Affective	0.07	1	615	0.78
Perceived Use	0.01	1	615	0.90
Perceived Control	1.14	1	615	0.28
Attitude toward health information	0.13	1	615	0.71
By Education				
Affective	0.31	4	612	0.86
Perceived Use	0.20	4	612	0.93
Perceived Control	0.49	4	612	0.73
Attitude toward health information	0.13	4	612	0.97
By Digital Generation				
Affective	0.08	3	613	0.96
Perceived Use	0.19	3	613	0.89
Perceived Control	0.22	3	613	0.87
Attitude toward health information	0.18	3	613	0.90

notion that parametric statistics can be used with Likert data (Norman, 2010).

4. Results

4.1. Attitudes toward health information and its components by gender, education, and generation

Table 3 presents the means and other descriptive statistics of the composite score of attitudes toward health information from all respondents, and each item was scored using the aforementioned Likert-type scale. The maximum possible score for affective components and perceived use components was 30 (6 items); the maximum score for perceived control components was 25 (5 items). The composite maximum score was 85 (17 items).

Table 3 shows that of all the components, the affective component has the highest contribution toward attitudes toward health information.

Table 4 displays the results of t-tests on the attitudes toward health information and each of its components (affectation, perceived use, and perceived control) by gender.

The t-test in Table 4 shows that the effect of gender on attitudes toward health information and its components of affective, perceived use, and perceived control of health care workers are not statistically significant. We can conclude that gender differences have no effect on attitude toward health information and its components. Table 5 displays the results of the ANOVA tests of attitudes toward health information components by education attainment.

Table 5 shows the composite score of the ANOVA test of attitudes toward health information by education attainment. We can conclude that there is no significant effect of educational attainment on the attitude toward health information components of affective and perceived use, while there is a significant effect of education on perceived control, $F_{4,612} = 6.4$, $p = 0.002$: of all the education-attainment groups, the respondents with a diploma education scored the highest.

Table 3. Summary Statistics for attitudes toward health information and its components of affective, perceived use and perceived control (N = 617).

Variables	Mean	Standard Deviation	Minimum Score	Maximum Score
Affective components (6 questions)	22.0	2.7	14	30
Perceived Use components (6 questions)	19.7	2.3	12	26
Perceived Control components (5 questions)	17.7	2.6	7	25
Composite Score attitude toward health information	59.4	6.0	37	81

Source: research questionnaire, each item was scored using Likert-type scale: minimum score = 1 and maximum score = 5

Table 4. Mean scores of attitudes toward health information and its components by gender.

Gender (t = 0.5)	N	Mean	Standard Deviation
Attitude toward health information (t = 1.8)			
Men	146	59.9	6.5
Women	471	59.2	5.8
Total (diff = 0.7)	617	59.4	6.0
Affective (t = 0.3)			
Men	146	21.9	2.9
Women	471	21.9	2.7
Total (diff = 0.08)	617	21.9	2.7
Perceived Use (t = 0.7)			
Men	146	19.8	2.0
Women	471	19.7	2.4
Total (diff = 0.1)	617	19.7	2.3
Perceived Control (t = 1.7)			
Men	146	17.8	2.9
Women	471	17.5	2.5
Total (diff = 0.4)	617	17.6	2.6

Note: attitudes toward health information by gender are **not statistically significant at $p < 0.05$** with $df = 615$.

Table 5. Mean scores of attitudes toward health information's components by education attainment.

Education	N	Affective		Perceived Use		Perceived Control	
		Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Junior or Senior High School	122	21.6	2.1	19.4	2.3	16.9	2.5
Diploma	72	22.0	2.3	20.1	2.2	18.2	2.5
Bachelor	258	22.3	2.9	19.7	2.4	17.9	2.5
Master	149	21.8	2.8	19.9	2.2	17.7	2.7
Doctoral	16	21.1	3.3	19.2	2.7	15.6	3.2
ANOVA		p = 0.06*		p = 0.18*		p = 0.002**	

Note: * = education effect is not statistically significant at $p < 0.05$; ** = education effect is statistically significant at $p < 0.05$ with df between groups = 4 and within groups = 612.

Table 6. Mean scores of attitudes toward health information by education attainment.

Education	N	Attitude toward health information	
		Mean	Standard Deviation
Junior or Senior High School	122	57.9	5.6
Diploma	72	60.3	5.3
Bachelor	258	60.0	6.3
Master	149	59.5	5.7
Doctoral	16	56.0	7.4
ANOVA		p = 0.00**	

** = education effect is statistically significant at $p < 0.05$ with df between groups = 4 and within groups = 612.

Table 6 presents the results of the ANOVA test. We can conclude that there is a significant effect of educational attainment on the overall score of attitudes toward health information of health care workers, $F_{4,612} = 4.2$, $p = 0.000$, in which respondents with a diploma education scored the highest. Next, we referred to the ANOVA procedures and conducted Tukey's HSD (honestly significant difference) post hoc test for pairwise comparison.

As for the perceived control components, Tukey HSD pairwise comparisons for variable education showed that the diploma group versus doctoral and master group versus doctoral group were significant at the 0.05 level. For overall attitude toward health information scores, Tukey HSD pairwise comparisons for variable education showed that the groups

of diploma versus doctoral, bachelor versus doctoral, and master versus doctoral were significant at the 0.05 level.

Table 7 presents the ANOVA test results. We can conclude that there is a significant effect of differences in digital generation on the attitude toward health information components of affective ($F_{3,613} = 5.12$, $p = 0.00$) and perceived control ($F_{3,613} = 8.69$, $p = 0.00$). Generation Z scored the lowest on the affective and perceived control components. Generation X scored highest on the components of affective and perceived control. The ANOVA test also demonstrated that there is no significant effect of generational differences on perceived use.

Table 8 presents the ANOVA test results. We can conclude that there is a significant effect of digital generation differences on the overall score of

Table 7. Mean scores of components of attitudes toward health information by digital generation differences.

Digital Generation	N	Affective		Perceived Use		Perceived Control	
		Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Baby boomers	48	22.1	2.9	20.2	2.1	17.7	2.9
Generation X	209	22.5	2.7	19.9	2.2	18.2	2.7
Generation Y	206	21.8	2.8	19.7	2.3	17.6	2.4
Generation Z	154	21.4	2.3	19.4	2.4	16.8	2.4
ANOVA		p = 0.00**		p = 0.09*		p = 0.00**	

Note: * = digital generation effect is not statistically significant at $p < 0.05$; ** = education effect is statistically significant at $p < 0.05$ with df between groups = 3 and within groups = 613.

Table 8. Mean scores of attitudes toward health information by digital generation differences.

Digital Generation	N	Attitude toward health information	
		Mean	Standard Deviation
Baby boomers	48	60.1	6.2
Generation X	209	60.7	5.8
Generation Y	206	59.2	6.0
Generation Z	154	57.7	5.7
ANOVA		P = 0.00**	

** = education effect is statistically significant at $p < 0.05$ with df between groups = 3 and within groups = 613.

attitudes toward health information of health care workers, $F_{3,613} = 7.91$, $p = 0.00$. The Generation X score was significantly the highest. Generation Z scored the lowest of the digital generations. Similarly, we referred to the ANOVA procedures and conducted Tukey's HSD post hoc test for pairwise comparison for the digital generations variable.

For affective components, the Tukey HSD pairwise comparisons for the variable digital generation were statistically significant for the group comparison of Generation X versus Generation Z. For perceived control components, the Tukey HSD pairwise comparisons for variable digital generation showed that Generation X versus Generation Z was significant at the 0.05 level. For overall attitude toward health information scores, Tukey HSD pairwise comparisons for the variable digital generation showed that baby boomers versus Generation Z and Generation X versus Generation Z were significant at the 0.05 level.

5. Discussion

The statistical analysis shows a significant effect of education and digital generational differences on the overall score of attitude toward health information from health care workers, but no significant effect of gender differences on the overall score of attitude toward health information was observed. Gender is an important demographic denominator that predicts individual behavior regarding health information (Rowley et al., 2015); however, for this study, the result shows that differences in educational attainment and digital generation influence attitudes toward health information from health care workers in West Java.

The literature has demonstrated no significant effect of gender differences on the score of health information attitude (Celino and Re Calegari, 2020) and no significant relationships between the demographic variables of gender and intentions (Knabe, 2012) and that gender was not predictive of behavioral aspects (Khan and Idris, 2019). More so when the context of a study is related to technology, studies have demonstrated no significant differences between females and males in using mobile social network applications (Abdelraheem and Ahmed, 2018), and gender differences were not significant for attitudes, perceptions, and uses of computers (Bain and Rice, 2006).

Nevertheless, some studies have tested the effect of gender differences and found significance in predicting the intention to act and preventive attitudes on potential risks (Nguyen et al., 2018), and responding

technology (Tsai and Lin, 2004). The significance of the gender effect on various variables is situational and conditionally dependent. Research also showed that the role of demographics (including gender) in predicting something often depends on the context (Knabe, 2012). This finding would also explain why other studies have not included gender as a demographic predictor associated with dependent variables, only as descriptive demographic characteristics data (Kotrlík et al., 2000). Not including gender as a determinant because of evidence of the statistically insignificant effect of gender in predicting variables depends on the context of study and the variables associated with gender, because some concepts cannot be predicted by gender differences. As for the research context of this study, we limited the respondents to individuals who self-identify as health care workers, and similarly, we observed no significant differences in gender differences in predicting attitudes toward health information.

Level of education and age differences (grouped based on digital generation) show a significant effect on attitude toward health information. Studies have also demonstrated similar results, in which age and education to some extent significantly affect social cognitive factors and individual behaviors (Othman et al., 2011). The literature has provided evidence of relationships among age, education, and health information, in which older adults tend to use health information more compared to younger adults because of the intervention factors (Wagner and Wagner, 2003), age, education, gender, socioeconomic status, perception of health, and the internet skills variable have significant roles in predicting internet use as a source of health information (W. Jacobs, Amuta and Jeon, 2017). Age is also associated with healthy behavior (Deeks et al., 2009).

Studies have demonstrated the relationship between education, age, and attitudes toward information and WA use, and they are relevant to the research context of this study. A study mentioned that age has a major effect on how individuals accept false news (Rampersad and Althiyabi, 2019). An earlier study by the same authors demonstrated that individuals from different age groups have different habits when using WA, when communicating in a private chat or group chat (Rosenfeld et al., 2018). In another study, age was important in predicting use of WA, for example, how individuals create status (Al-Smadi, 2017).

The results of this study demonstrated that the respondents from Generation Z had the lowest attitude toward health information of all the

groups. Generation Z tended to limit communication and interaction with individuals outside their peer group. This finding corresponds with Generation Z's preference to communicate and interact with individuals within their circle when using online social sites (PrakashYadav and Rai, 2017), in contrast to other generations, who are more open to interacting with individuals outside their circle.

The circulation of health information on WA is characterized by group message spamming in groups with "loose" member ties (e.g., WA groups of high school alumna, hobby groups). Caution should be practiced by health care workers in responding to various types of health information. For example, certain cultural references consider silence or not responding to messages as manner of approval. This phenomenon is concerning because counterproductive information may be considered reliable information on the basis of group members not responding, allowing individuals with less knowledge to accept such information.

Health care workers must be reactive, respond to circulated messages on WA with health information content, and approve reliable information and correct false information and misinformation because interactions on social media depend on the type of information shared and commented by various actors (Pulido et al., 2020). Health care workers' comments on health information can eliminate the potential of misinformation in non-medical individuals. Additionally, further research is necessary on correcting health information and how it should be designed, constructed, and applied to maximize its impact (Lewandowsky et al., 2012).

The implication of this research is that the education level and digital generation have a role in differentiating health care workers' treatment of the health information they receive through WA. This generalization can operate in the same manner in similar situations, namely, in societies where media and health information usage habits are similar to the characteristics of the respondents studied.

On the other hand, these findings have implications for national policy, individual health care organizations, and further research (Cowey and Potts, 2018), in managing health information through social media, especially WA. Understanding social media provides new insights into the decision-making process of policy makers at the global, national, local, and organizational levels (Fernández-Luque and Bau, 2015), for example, identifying and taking action against information sources contaminating health information (Waszak et al., 2018). Carefully treating health information is important because misinformation and disinformation on health are mostly aggressive and have a social impact; thus, knowledge is necessary to manage how it is shared on social media (Pulido et al., 2020).

This study has several limitations. First, data on the population of health care workers in West Java were unavailable, but we established an appropriate sampling frame in terms of having an adequate sample that represents specific groups based on types of occupation and denominators of gender, education, and age. This condition makes determining the minimum number of samples when using probability sampling difficult and creates a disproportionate number of respondents based on gender and digital generations, although statistical tests showed equal variances among groups, using Levene's test. We also did not break down the occupation groups of health care workers.

This research is a modest study conducted in one location. Some of the findings are consistent with existing literature, but more evidence is necessary before firm recommendations can be made. However, if the replication of these findings is found in further research, we recommend that further research add specific categories of health care workers as a denominator, to improve the understanding of how professions may affect attitudes toward health information, increase the number of samples with a better sampling frame, considering a more balanced proportion of respondent groups, and explore the power of gender, education, and digital generations as predictors of attitudes toward health information and its components.

6. Conclusions

We found no evidence that gender is a predictor of attitudes toward health information; however, we did find evidence on the effect of educational attainment and the effect of differences in digital generation in predicting attitudes toward health information from health care workers in West Java. Notably, for education attainment, individuals with a diploma had the highest composite score of attitudes toward health information and its components. Distinguishing digital generations, health care workers belonging to Generation X scored the highest, and Generation Z scored the lowest.

The massive circulation of health information on various social media, particularly WA, calls for further research and a proportionate attitude from health care workers; then, they can disseminate reliable health information to the public through the media, to convey accurate information to the public, improving the quality of public health, not diminishing it. The results of this research can be used in developing interventions to communicate health information through social media to groups with low literacy skills, especially health information spread on WA by health care workers.

Declarations

Author contribution statement

S. Dida: Conceived and designed the experiments; Performed the experiments.

H. Hafiar: Conceived and designed the experiments; Wrote the paper.

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The data that has been used is confidential.

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The authors declare no conflict of interest.

Additional information

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