

# Exposure of GERMAS Information by using Phones Preventing Non-communicable Disease for Millennials, Medan City

Lita Sri Andayani<sup>1</sup>, Ernawati Nasution<sup>1</sup>, Eddy Syahrial<sup>1</sup>

<sup>1</sup>Faculty of Public Health, Universitas Sumatera Utara, Universitas Street Number 21, USU Medan 20155, Indonesia

**Keywords:** GERMAS (Healthy Life Style Movement) Information, Millennials, Preventing, Non-Communicable Disease.

**Abstract:** Millennials are people born in 1980 - 2000, with characteristic internet addiction, cell phones, digital technologies, lazy moving, less physical activity, consuming junk food, risk of having non-communicable diseases (NCDs). Research objective is to analyze the correlation between GERMAS information exposure and prevention of NCDs by implementing three priorities of GERMAS. This study used cross-sectional design with 100 sample. The results found that there was a correlation between exposure of GERMAS information and physical activity ( $p = 0.040$ ); there was a correlation on eating vegetables and fruits ( $p = 0.022$ ), but no correlation on health examination periodically ( $p = 0.606$ ). We also found the correlation on GERMAS actions ( $p = 0.032$ ) with GERMAS information exposure, and correlation GERMAS knowledge ( $p = 0.015$ ) and GERMAS action ( $p = 0.000$ ) toward NCDs prevention. There was a correlation between the use of smartphones and NCDs prevention ( $p = 0.012$ ). We can conclude that GERMAS information exposure has a correlation with physical activity and eating fruits but not with periodic medical examination. There is correlation between GERMAS knowledge and action to NCDs prevention, also there is correlation using of phone to NCDs prevention. It is recommended to use GERMAS application on smartphone to empower millennials in NCDs prevention.

## 1 INTRODUCTION

Millennial generation are people born in 1980 and 2000. The generation currently aged the range of 18-38 years, who grow characterized increasing recognition themselves, have high confidence (Hobart, 2014) and marked technological developments that enter everyday life (Sari, 2015). The educated and understood generation of the technology, internet addiction, self-confidence and high self-esteem and opened and tolerant of change, marked the increase in using and familiarity with communications, media, and digital technologies (Kilber et al, 2014).

Technological developments cause lifestyle changes, such as physical activity (lazy exercise), tend to be "mager" or lazy moving, spending hours in front of computer screen, smoking, sleeping late, eating lots of *junk food*. The behavioral changes create a higher risk of health problems such as obesity, hypertension, type 2 diabetes, a heart disease, stroke and mental illness. Basic Health Research (2013) shows the prevalence of hypertension in Indonesia at age  $\geq 18$  years of 25.8%. Prevalence of

DM disease 2.1% (Ministry of Health, 2013) up from 1.1% (Balitbangkes, 2014), with average of North Sumatera 1.76%, Medan city 2.72%. The stroke disease had been concerning young people, namely inpatient acute ischemic stroke in men and women in 18-34 years old increased by 50% period 2003-2012 (Balitbangkes, 2014).

The view of the proportion of enough physical activity in Indonesia average 8.25%, North Sumatra 7.20%, Medan 15.15%. Proportion of sedentary behavior  $\geq 6$  hours per day 24.1% (Ministry of Health, 2013). Lack of physical activity will be associated by the incidence of obesity. The average of prevalence of obesity in Indonesia 26.60%, North Sumatra average 29.56%, Medan 37.53% (Balitbangkes, 2014). The proportion of the national average consumption behavior is less vegetables and or fruits 93.5%. Behavior of food consumption is risky to population  $\geq 10$  years old food and sweet drinks (53.1%), and fatty foods (40.7%) (Ministry of Health, 2013).

The increasing of NCDs incidence will correlate the increase of health care financing; decreased community productivity; the declining

competitiveness of the state that ultimately affects the socioeconomic conditions of society. Ministry of Health, Indonesia has launched a HEALTHY PEOPLE MOVEMENT (GERMAS). GERMAS as a health promotion effort in changing human behavior in preventing the incidence of non-communicable diseases (NCDs). GERMAS supported by Presidential Instruction of Indonesia in 2017 with 3 priority actions: 1) Physical Activity, 2) Consumption of Fruits and Vegetables, 3) Conduct periodic health examination.

The Research objective to analyze the correlation of GERMAS information exposure with 3 priority GERMAS actions, GERMAS behavioral correlation with NCDs prevention measures, the use of mobile phone correlations with NCDs prevention.

## 2 RESEARCH METHODS

Type cross-sectional study, carried out in Medan city. Research population throughout productive age 15-39 years of 842,484. Number of sample 100 people taken with simple random sampling. Data are collected by interviewing respondents using questionnaires.

## 3 RESULTS AND DISCUSSION

### 3.1 The Correlation GERMAS Information Exposures to Three Priority GERMAS Actions

Spread of GERMAS information intensively conducted by Ministry of Health through social media and other information media such as television or advertising services. This information is the basic stage to reduce morbidity and mortality rates in terms of NCDs prevention.

From table 1, The analysis shows that  $p\text{ value} = 0,040 < \alpha (0,05)$ , it means there is a correlation the GERMAS information exposure to physical activity activity.

Table 1: Correlation of GERMAS information exposure to physical activity measures

GERMAS Information Exposure	Physical Activity Actions				Total		p value
	Bad		Good		n	%	
	n	%	n	%			
Bad	18	72.0	7	28.0	25	100	0.040
Enough	15	93.8	1	6.3	16	100	
Good	36	61.0	23	39.0	59	100.0	
Total	69	69.0	31	31.0	100	100.0	

Physical activity is a human activity to move. Regular physical activity and become one of the habits will improve physical endurance. The "active" physical activity criterion is an individual who performs moderate or moderate physical activity or both, while the "less active" criterion is an individual who does not engage in moderate or severe physical activity. Performing regular activity (aerobic physical activity for 30-45 minutes / day) is known to be very effective in reducing the relative risk of hypertension by up to 19% to 30% (Ministry of Health, 2013). Damanik Research (2014), there is a correlation between physical activity and food consumption patterns with more nutritional incidents in USU students (Nugroho et al, 2016), there is a correlation of physical activity with hypertension and there is a correlation of nutritional status with hypertension of employees in Subdistrict Tomohon Utara.

Millennials tend to perform sedentary behavior. The sedentary behavior is sitting or lying down everyday life either at work (work in front of computer, reading, etc.), at home (watching TV, playing games, etc.), traveling / transportation (bus, train, motor), but not including bedtime. Sedentary behavior can increase the risk of obesity. Sedentary behavior in children is often followed by higher *snack* consumption and low energy expenditure, which is a trigger factor for obesity (Mansjoer, 1999), also (Negri et al, 1991), an increase in high blood pressure in adolescents who perform activities more than 2 hours each day.

It is an increasing trend of overweight and obesity in children and adolescents due to decreased physical activity and increased sedentary behavior such as watching TV and using a video or a game computer. It is in line with the opinion of an expert panel of the American College of Sports Medicine (ACSM) that obesity is directly related to the number of hours spent watching television (Marshall, 20014)..

Results of a research (Paruntu et al, 2015), regular and consistence physical activity shows a reciprocal correlation with coronary heart disease and has a positive effect on quality of life and other

psychological variables. Most of Teenagers in California intervene to raise the level of physical activity. The physical environment plays a very important role in the level of physical activity in adolescents (Mayosi, 2009).

Table 2 : Correlation of GERMAS information exposure to vegetables and fruits action

GERMAS Information Exposure	Action of Eating Vegetables and Fruits						Total		p value
	Bad		Enough		Good		n	%	
	n	%	n	%	n	%			
Bad	7	28.0	11	44.0	7	28	25	100	0.022
Enough	9	56.3	4	25.0	3	18.8	16	100	
Good	12	20.3	38	64.4	9	15.3	59	100	
Total	28	28.0	53	53.0	19	19.0	100	100	

From the table above, analysis result shows that the  $p\text{ value} = 0,040 < \alpha (0.05)$ , there is a correlation the GERMAS exposure information to the act of eating vegetables and fruits. The more information received the more likely it will be for the individual to act. A research from (Reynolds, 2004) the correlation of nutrition knowledge with the habit of eating fruits and vegetables to students in Bogor.

The results of the study, the importance of fruits and vegetables in reducing cancer risk (Block et al, 1999) and cardiovascular disease (Key et al, 1997). Eating 5 servings of fruit and vegetables in a day will benefit for the health (Foerster et al, 1995). Similarly, increased consumption of fruits and vegetables has been recommended by the UK and other European authorities (Department of Health, 1994), (Schiffman, 2000), and (Takeuchi, 2017) has recommended a minimum daily intake for adults of 400g of fruits and vegetables in a day.

Table 3 : Correlation of GERMAS information exposure to action medical examination Periodically

GERMAS Information Exposure	Regular Health Check Measures				Total		p value
	Bad		Good		n	%	
	n	%	n	%			
Bad	20	80.0	5	20.0	25	100	0.606
Enough	14	87.5	2	12.5	16	100	
Good	52	88.1	7	11.9	59	100	
Total	86	86.0	14	14.0	100	100	

Routine screening / screening activities as a prevention must be taken by every resident of age > 15 and above to detect early behavioral risk factors that may lead to heart disease, cancer, diabetes and chronic lung disease, sensory disorders and mental disorders.

From Table 3, analysis result shows that the  $p\text{ value} = 0.606 > \alpha (0.05)$ , there was no association between exposure to the action information GERMAS periodic health checks on GERMAS. Information about GERMAS has a positive impact on people's health, namely to reduce the burden of infectious and non-infectious diseases. The impact of such exposure may be associated with the increasing number of people who check their health regularly to health center. The purpose of it to identify the risk factors and early disease signs, prevent disease in the future through early intervention (Larsen, 2012).

Table 4: Correlation of GERMAS information exposure to GERMAS actions

GERMAS Information Exposure	GERMAS action						Total		p value
	Bad		Enough		Good		n	%	
	n	%	n	%	n	%			
Bad	11	44.0	10	40.0	4	16.0	25	100	0.032
Enough	10	62.5	4	25.0	2	12.5	16	100	
Good	15	25.4	38	64.4	6	10.2	59	100	
Total	36	36.0	52	52.0	12	12.0	100	100	

From the table above, analysis result shows that the  $p\text{ value} = 0.032 < \alpha (0.05)$ , there is a correlation between GERMAS information exposure with GERMAS action. The more information is received by individual knowledge will also increase so that it triggers the individual to act. Action is an attitude not yet automatically manifested in an action.

### 3.2 Correlation of GERMAS Behavior to Action of NCDs Prevention

From table 5, p acyl analysis shows that the  $p\text{ value} = 0.015 < \alpha (0.05)$ , there is a correlation the GERMAS knowledge about action of NCDs Prevention.

Table 5 : Correlation of GERMAS knowledge with Action of NCDs prevention

GERMAS Knowledge	Action of NCDs Prevention				Total		p value
	Bad		Good		n	%	
	n	%	n	%			
Bad	0	0.0	1	100.0	1	100	0.015
Enough	10	40.0	15	60.0	25	100	
Good	10	13.5	64	86.5	74	100	
Total	20	20.0	80	80.0	100	100	

From table 5, analysis result shows that the  $p\text{ value} = 0.000 < \alpha (0.05)$ , which means there is a correlation the GERMAS knowledge to NCDs prevention with this case supported research [16], an increase in the burden of disease over the next decade in South Africa in the absence of NCDs prevention actions, by means of advocacy and effective action.

Table 6 : Correlation of GERMAS actions with Action of NCDs prevention

GERMAS action	Action of NCDs prevention				Total		p value
	Bad		Good		n	%	
	n	%	n	%			
Bad	16	44.4	20	55.6	36	100	0,000
Enough	4	7.7	48	92.3	52	100	
Good	0	0.0	12	100.0	12	100	
Total	20	20.0	80	80.0	100	100	

### 3.3 Smartphone Usage Correlation with NCDs Prevention

From table 7, analysis result shows that the p value = 0.012 < α (0.05), which means that there is a correlation the use of smart phones with NCDs prevention.

Table 7 . Smart phone usage correlation with NCDs prevention measures

Smartphone Usage	NCDs Prevention Measures				Total		p value
	Bad		Good		n	%	
	n	%	n	%			
Bad	2	66.7	1	33.3	3	100	0.012
Enough	11	29.7	26	70.3	37	100	
Good	7	11.7	53	88.3	60	100	
Total	20	20.0	80	80.0	100	100	

Nowadays, people communicate and get information by using the smart phones. All features are already available on the service. Smartphones are currently used as medi a health information. The Research that supporting it (Dennison et al, 2013), health behavior interventions by developing health applications in smartphone. They said (Scottish, 1993) a *smartphone* web worthy of educational material to support the practice of antenatal perineal massage in pregnant women.

The determination of the technology is very high students show that they use a smartphone with new technology and innovation in accordance with the era or the present. The study (Bianchi et al, 2005) shows that youth groups tend to experiment with new technologies and show off technological addictions that can be used with existing features in mobile phones.

## 4 CONCLUSIONS

There is a correlation of GERMAS information exposure to the action of physical activity, eating fruits and vegetables and examining the health periodically, also a correlation GERMAS knowledge and action to NCDs prevention, and there is a correlation the mobile phone usage to NCDs prevention. Based on the above conclusions it is suggested GERMAS information can be done by using the application on smart phones to empower millennial generation on NCDs prevention effort.

## ACKNOWLEDGEMENTS

The authors would like to thank the Directorate of Research and Community Service of Directorate Directorate General for Research and Development of the Ministry of Research, Technology and Higher Education for the funding support of this research with contract number: 226/UN5.2.3.1/PPM/KP-DRPM/2018.

## REFERENCES

- Balitbangkes Ministry of Health RI, 2014. *Public Health Development Index 2013 (HDI)*. Jakarta. Agency for Health Research and Development.
- Bianchi, A. and Phillips J, 2005. *Psychological Predictors of Problem Mobile Phone Use*. Australia. Psychology of Department, Monash University.
- Block, G., et al, 1999. *Fruit, Vegetables and Cancer Prevention: a review of the epidemiological evidence*. Nutrition and Cancer, 18, 1-29.
- Damanik, et al, 2014. *Risk Factors That Cause More Nutrition Incidents In Students Of The Faculty Of Public Health USU. Medan*, Journal of North Sumatera University.
- Dennison, Laura, et al, 2013. *Opportunities and Challenges for Smartphones Applications in Supporting Health Behavior Change: Qualitative Study*. J Med Internet Res ; 15 (4): e86. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3636318/?report=printable>.
- Department of Health, 2004. *Poor living conditions Health Survey train*. Jakarta. Ministry of Health report.
- Department Of Health, 1994. *Nutritional Aspects of Cardiovascular Disease*. London. HMSO.
- Foerster, S., et al, 1995. *California's "5 a day- for better health!" Campaign: an innovative population-based effort to effect large-scale dietary change*. American Journal of Preventive Medicine, 11, 124-131.
- Hobart, Buddy, 2014. *Understanding Generation Y*. Solution 21 New Jersey. Princenton One.

- Ministry of Health Indonesia, 2013. *Basic Health Research 2013*. Jakarta. Balitbangkes Ministry of Health.
- Key, T., et al, 1996 *Dietary Habits and Mortality in 11000 Vegetarians and Health Conscious People: Result of a 17 years follow up* British Medical Journal 313, 775-778.
- Kilber, J., Barclay, A., and Ohmer, D, 2014. *Seven Tips for Managing Generation Y*. Journal of Management Policy and Practice 15: 4,80-9.
- Larsen C, and Friends., 2012. *Regular Health Checks: Cross-Sectional Survey* . Nordic Cochrane Center, Rigshospitalet and University of Copenhagen. Copenhagen, Denmark.
- Mansjoer A, 1999. *Hypertension in Indonesia*, Ed. Kapita Selekta Medicine. Jakarta: Media Aesculapius; p.518-21.
- Marshall, S., Biddle, S., Gorely, T., 2004. *Relationships Between Media Use, Body Fatness and Physical Activity in Children and Youth: A Meta-Analysis*. International Journal of Obesity, 28, 1238-1246.
- Mayosi, B , 2009 *The Burden of Non-Communicable Diseases in South Africa* . Series.
- Mota, Jorge., Et al, 2005. *Perceived Neighborhood Environments and Physical Activity in Adolescents*. University of Porto Portugal.
- Negri, E., et al, 1991. *Vegetable and Fruit Consumption and Cancer Risk* International Journal of Cancer, 48, 350-354.
- Nugroho, et al, 2016. *Description of Risk Factor. Increased Blood Pressure in Adolescents Age 12-14 Years (Study At Al Islam Islamic Junior High School 14 Semarang*. Journal of Public Health (E-Journal) Volume 4, Number 1, January 2016 (ISSN: 2356-3346) <http://ejournal-s1.undip.ac.id/index.php/jkm>.
- Paruntu, et al, 2015. *Relationship Physical Activity, Nutritional Status, and Hypertension In Employees in District Tomohon North* Nutrition Journal Vol 7. No 1. <http://ejurnal.poltekkkesmanado.ac.id/index.php/gizido/article/view/270/285>.
- Reynolds, Kim., Killen, Joel., 2004. *Psychosocial Predictors of Physical Activity in Adolescents*. Stanford University. Stanford, California 94305 USA.
- Sari, Kiki, 2015. *Knowledge of Nutrition Related to Degenerative Disease, Consumption Pattern and Physical Activity of IPB Students*. Bogor Agricultural University.
- Schiffman, Lean, Leslie Lazar Kanuk, 2000. *Consumer Behavior Seventh Edition* New Jersey: Patience Hall International, Inc.
- Scottish Office, 1993. *The Scottish Diet*. Edinburgh HMSO.
- Takeuchi and Horiuchi, 2017. *Feasibility of a Smartphone website to support antenatal Perineal massage in pregnant women* BMC Pregnancy and Childbirth (2017) 17: 354. DOI 10.1186 / s12884-017-1536-9.
- World Health Organization, 1990 *Diet, Nutrition, and Prevention of Chronic Diseases. Report of a WHO study group* Geneva WHO (Technical Report Series-797).