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Determinants of Maternal Health Care Utilization in the Philippines: Implications on Information Dissemination Strategies

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ABSTRACT. From 2000 to 2017, maternal deaths in the Philippines considerably decreased. With COVID-19, the mechanisms to ensure safe pregnancy and childbirth for mothers have been greatly challenged. To find possible means by which women can access health care services remotely, the study looked into the factors affecting Filipino women's utilization of maternal health care services using the 2017 *Philippine National Demographic and Health Survey.* Place of residence and employment status significantly affect the frequency by which women read newspaper or magazine, listen to the radio, and access the internet. Wealth status is the sole socio-demographic characteristic that has significant relationship to all the maternal health care indicators. Frequency in using the internet is the only exposure to mass media that was found to positively affect Filipino women's maternal health care use, i.e., from pregnancy, childbirth, to postnatal. The odds of following the recommended maternal health care services increase as the frequency of using the internet increases. There is therefore a need for the government to maximize the use of the internet by enhancing connectivity of and providing internet-ready gadgets to government hospitals, barangay health centers, and rural health units to reach women who are in need of utmost maternal health care services especially during a pandemic when there is limited movement and access to and from health care facilities.

Keywords: *Antenatal care, intrapartum care, mass media, maternal health care utilization, postnatal care*

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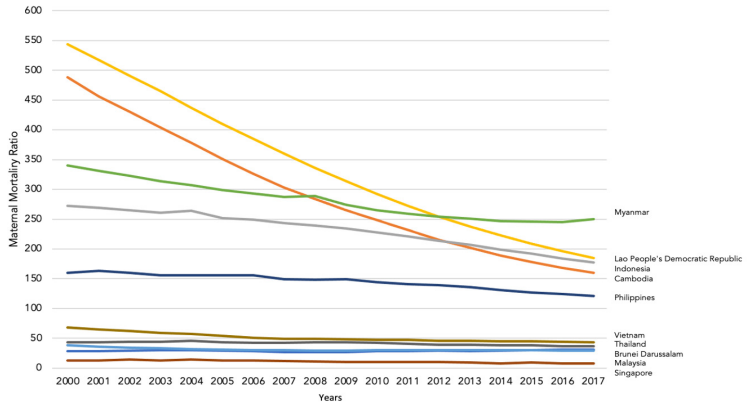
INTRODUCTION

Over the years, there have been considerable improvements in ensuring safe pregnancy and delivery for mothers. Maternal deaths refer to "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes" (World Health Organization [WHO], 2012, p. 9). From 2000 to 2017, the United Nations Maternal Mortality Estimation Inter-Agency Group (UNMMEIG) reported that maternal mortality ratio (MMR) decreased from 342 to 211 per 100,000 live births (WHO, 2019b). Between high-income and low-income countries, the latter group still experience more deaths as compared with the former. A woman's lifetime risk of maternal death, which is defined as "the probability that a 15-year old woman will eventually die from a maternal cause," is only 1 in 5,400 for high-income countries as compared with 45 in 5,400 for low-income countries (WHO, 2019a, para. 7).

Within Southeast Asia, only 5 out of the 10 member-countries are seen to have the potential to achieve the Sustainable Development Goal (SDG) Target 3.1, that is, the reduction of global MMR to less than 70 per 100,000 live births by 2030 (Figure 1). These countries are Singapore, Malaysia, Brunei Darussalam, Thailand, and Vietnam. Leading the group with the least number of maternal deaths is Singapore with only 8 per 100,000 live births in 2017; Myanmar, on the other hand, reported the most number of maternal deaths. Even with the significant decline of maternal deaths, in 2017, the MMR in the Philippines of 121 remains far from the SDG target of 70.

Maternal Health Care and the Onset of COVID-19 in the Philippines

With all that has been achieved in ensuring safe pregnancy and childbirth for all in the past years, another threat to human existence has arrived in the form of COVID-19, an infectious disease caused by a newly discovered coronavirus in 2019 (WHO, 2020). On March 11, 2020, WHO declared COVID-19 as a pandemic. According to the Johns Hopkins Coronavirus Resource Center, as of June 2, 2021, the total number of confirmed COVID-19 cases worldwide has reached 171,196,260 with 3,565,444 deaths. During the same day, the same source noted that there were 1,235,467 confirmed cases in the Philippines with 21,012 deaths from COVID-19.



Source: World Health Organization, 2017
Note: Maternal Mortality Ratio (MMR) refers to maternal deaths per 100,000 live births.

Figure 1. Maternal Mortality Ratio (MMR) in Southeast Asia, 2000–2017

To curb the spread of COVID-19, President Rodrigo Duterte has declared the whole country on State of Public Health Emergency on March 16, 2020. From then on, strict quarantine measures have been put in place including lockdowns for the entire Luzon (main island of the Philippines). This pronouncement was reinforced several times which meant limited mobility for all. In areas under Enhanced Community Quarantine (ECQ), Modified ECQ (MECQ), and General Community Quarantine (GCQ), pregnant women were among those required to remain in their household at all times (Inter-Agency Task Force for the Management of Emerging and Infectious Diseases [IATF], 2020).

The United Nations Population Fund (UNFPA) noted that healthy women of child-bearing age and pregnant may not be at high risk for moderate to severe disease should they get infected with COVID-19. Nonetheless, the UN agency stressed that there is an increased risk of complications from any respiratory disease that may emerge due to physiological changes that occur during pregnancy (e.g., reduced lung function, increased oxygen consumption, and changed immunity) (UNFPA, 2020).

With limited physical access to health facilities and in person check-up with a skilled health personnel, the needed care during and after a pregnancy was greatly affected. Mothers, therefore, relied heavily for needed information and guidance through mass media, which they

could access at home. It is in these trying times that mass media may be used as a viable tool in reaching out to pregnant mothers when all forms of mobility to and from barangay health centers (BHCs), rural health units (RHUs), or a hospital have been cut off due to stringent quarantine measures. While it is true that there are already challenges in physically accessing essential health care services even before the pandemic, the pressing need to establish an efficient and effective online system in addressing this concern could not be discounted.

This study looked into the Filipino women's socio-demographic characteristics and their exposure to mass media vis-à-vis their maternal health care utilization. By understanding such relationship, this study aims to identify possible strategies in disseminating important information about maternal health care through different sources of knowledge using mass media platforms.

Maternal Health Care

Maternal health care services are of much importance during pregnancy, childbirth, and postnatal period.

Antenatal Care (ANC) is the "type of care provided by skilled healthcare personnel to pregnant women and adolescent girls to ensure the most favorable health conditions for both mother and baby throughout the pregnancy" (WHO, 2016, p. 1). Using meta-ethnographic approaches, Downe et al. (2016) summarize what positive pregnancy means for pregnant women across several countries:

> A positive pregnancy experience has four sub-themes or components, namely maintaining physical and sociocultural normality; maintaining a healthy pregnancy for mother and baby (including preventing and treating risks, illness and death); effective transition to positive labor and birth; and achieving positive motherhood (including maternal self-esteem, competence, autonomy) (p. 532).

To complement existing measures to curb maternal deaths worldwide, WHO, in 2016, formulated a new set of recommendations on the delivery of ANC services to achieve a positive pregnancy outcome. The recommendations are grouped into five main components: a) nutritional interventions; b) maternal and fetal assessment; c) preventive measures; d) interventions for common physiological symptoms; and e) health systems interventions to improve the utilization and quality of ANC. The guidelines were meant for pregnant adult women and adolescent girls

who chose to receive ANC from any healthcare facility or community-based setting (WHO, 2016).

The health and survival of a growing child relies heavily on the state of health and extent of ANC a mother receives while pregnant (Bhutta et al., 2003). Women with inadequate ANC during pregnancy have higher risk of having a low-birth-weight infant (Kogan et al., 1994; Sable & Herman, 1997) and higher incidence of preterm birth and postpartum hemorrhage (Humphrey & Keating, 2004).

Intrapartum Care encompasses the context of care throughout labor and childbirth; during the first, second, and third stages of labor; as well as the immediate care thereafter for both mother and newborn (WHO, 2018b). In 2018, the group, composed of WHO, UNFPA, United Nations Children's Fund (UNICEF), International Confederation of Midwives, International Council of Nurses, International Federation of Gynecology and Obstetrics, and International Pediatric Association, has identified midwives, nurses, obstetricians, pediatricians, and anesthetists as an integrated team of maternal and newborn health (MNH) professionals. More specifically, the group defined a skilled health personnel as stated below:

> Competent MNH professionals educated, trained, and regulated to national and international standards who can 1) provide and promote evidence-based, human-rights- based, quality, socioculturally sensitive and dignified care to women and newborns; 2) facilitate physiological processes during labor and delivery to ensure a clean and positive childbirth experience; and 3) identify and manage or refer women and/or newborns with complications. (WHO, 2018a, p. 1)

In 2018, WHO released a new set of recommendations for intrapartum care to achieve a positive childbirth experience for both mother and child. The guidelines were arranged into five main components: a) care throughout labor and birth; b) first stage of labor; c) second stage of labor; d) third stage of labor; and e) care of the newborn. Similar to the ANC recommendations for a positive pregnancy experience, the recommendations for intrapartum care were drawn from empirical evidence to ensure that the guidelines were up-to-date and relevant.

The presence of a skilled health personnel during childbirth is among the main indicators to attain *Sustainable Development Goal 3* in reducing global MMR to less than 70 per 100,000 live births (WHO, 2019a). According to the UN Economic and Social Council (2019), in

2018, 81% of childbirths were attended by a skilled health personnel as compared with only 69% in 2012. Occurrence of stillbirths is greatly reduced when childbirths are attended by some skilled health personnel (Yakoob et al., 2011).

In ***Postnatal Care,*** the term "postnatal" means "all issues related to the mother and baby after birth" and that the "postnatal period" actually "begins upon childbirth and stretches up to six weeks after birth" (WHO, 2010, p.12). Postnatal care should be administered to both mothers and babies within 24 hours of delivery with at least four postnatal checkups in the first 6 weeks (WHO, 2015).

In 2013, WHO published the recommendations on postnatal care for the mother and newborn. The 12 key components are as follows: a) timing of discharge from a health facility after birth; b) number and timing of postnatal contacts; c) home visits for postnatal care; d) assessment of the baby; e) exclusive breastfeeding; f) cord care; g) other postnatal care for the newborn; h) assessment of the mother; i) counselling; j) iron and folic acid supplementation; k) prophylactic antibiotics; and l) psychosocial support. The guidelines were formulated to further aid the physicians, midwives, nurses, and auxiliary nurse-midwives in providing postnatal care in health care facilities or even at home (WHO, 2013).

As it is deemed important during pregnancy and childbirth, skilled health personnel is also essential during the postnatal period. Maternal death and disability could be greatly reduced with the help of a skilled health personnel who could immediately detect problems and has the capacity to refer to higher level of care if complications arise (WHO, 2019a). The risks of postnatal maternal deaths are high during the first 24 hours up to first week postnatal, which could extend until the succeeding week (Li et al., 1996). Without skilled health personnel, estimated MMR is around 1,000 to 2,000 per 100,000 births (de Bernis et al., 2003). In a study in India, health facility delivery with postnatal care lessens the probability of neonatal deaths (Fadel et al., 2015).

Exposure to Mass Media and Maternal Health Care Utilization

Mass media have the capacity to influence people's lives by promoting health through information dissemination and motivating people to change behavior, with or without a crisis (Maryon-Davis, 2012; Viswanath et al., 2007). The mass media fulfill four levels of health promotion intervention (Flora et al., 1989, pp. 184-185):

Media as Educator. Media is the primary or sole means for achieving health promotion goals. Media can effectively alter antecedents to health behavior as well as certain behaviors.

Media as Supporter. Media can reinforce old messages, support health changes, encourage maintenance of change, or keep health issues on the public agenda.

Media as Promoter. Media can familiarize audience members with health behavior change products and services, and encourage the audience to call, write, or participate in programs.

Media as Supplement. Media can play a supplementary role by being integrated into a program that includes face-to-face or other forms of intervention.

Exposure to mass media significantly affects behavior change among women. In Bangladesh, women who frequently watch television were found to be more likely to want fewer children, follow the recommended number of ANC visits, and more likely to have their childbirths be attended by a skilled health personnel (Rahman et al., 2017). In the study of Fatema and Lariscy (2020) in four South Asian countries, women exposed to mass media had higher likelihood of receiving ANC, having skilled health personnel in their childbirths, and complying with the recommended postnatal care. Acharya et al. (2015) found that mass media exposure led women in Nepal to avail various ANC components including the recommended number of visits.

Exposure to mass media also increased the likelihood of ANC attendance and influenced greater odds of following recommended intrapartum care among women in Ethiopia and Vietnam (Birmeta et al., 2013; Trinh & Kim, 2017) and early postnatal care attendance in Uganda (Ndugga et al., 2020). Exposure to information on intrapartum care may enhance women's awareness on the benefits of having childbirths in a health facility (Boah et al., 2018). In Ethiopia and Pakistan, television exposure of at least once a week led to greater likelihood of births in health facilities (Ketemaw et al., 2020; Agha & Carton, 2011). On the other hand, Solanke and Rahman (2018) found that the low utilization of skilled care attendant at delivery among women in Nigeria was due to the absence of widespread information regarding dangers of unskilled attendant at birth, which could have been made possible through massive public health education messages through radio.

Socio-demographic Characteristics and Maternal Health Care Utilization

Maternal age and level of parity have a direct and inverse relationship, respectively, with ANC and intrapartum care utilization. Women in the younger age group have higher likelihood of attending ANC services (Birmeta et al., 2013) and having health facility deliveries (Tekelab et al., 2015; Tsegay et al., 2013). On the contrary, women who have had two or more children ever born[i] have lesser likelihood of following the recommended ANC in their succeeding pregnancies (Beeckman et al., 2010; Humphrey & Keating, 2004; Phoxay et al., 2001; WHO & UNICEF, 2003). Health facility deliveries were more probable among women with only one child (Birmeta et al., 2013; Boah et al., 2018; Tekelab et al., 2015; Tsegay et al., 2013; Yaya et al., 2018). Without prior childbirth experience, women delivering for the first time may not be as confident and would rather have a skilled birth attendant for a safer delivery or for any unforeseen circumstances (Boah et al., 2018).

Women in the urban areas, who are better educated, employed, and affluent are more likely to follow the recommended ANC, intrapartum care, and postnatal care (Alemayehu & Mekonnen, 2015; Beeckman et al., 2010; Dankwah et al., 2019; Gebresilassie et al., 2017; Manyeh et al., 2017; Ndugga et al., 2020; Tsegay et al., 2013; Yaya et al., 2018).

In predicting ANC utilization in the Philippines using the *2013 Philippines National Demographic and Health Survey* (NDHS), Cananua-Labid (2017) found that wealth quintile and educational level were among the influential factors in ANC utilization in the country. On the other hand, Horiguchi and Nakazawa (2018) looked into a more localized population in the Philippines, i.e., in the Municipality of Tanauan, Leyte province. The authors studied factors that caused delay in the first ANC visit among women. They found that women with more than one child have known they were pregnant earlier than those with only one child or is about to give birth to their first child. However, knowing that they were pregnant earlier did not translate to a timely first ANC visit. The study noted that these women tend to delay their first ANC visit as they could not get help immediately in taking care of their other children while they go to the health center. They also noted that pregnant mothers with more than one child uses the delayed timing of ANC to ponder whether they will keep the baby in their womb.

[i]The number of children ever born refers to births to date for a particular cohort of women at a particular point in time (Weeks, 2016).

Aside from the number of children ever born, Shimazaki et al. (2013) found that higher education, distance to a health facility, health problems experienced and recognized at ANC, and the person deciding on the delivery location as the factors affecting facility-based delivery among women in Mayoyao, Ifugao Province in the Philippines. They revealed that less educated women in the area needed more assistance since the health materials were not in their local dialect.

METHODOLOGY

The study was conducted through secondary data analysis using the women's data file of the *2017 Philippines NDHS*, which was acquired from the Demographic and Health Surveys (DHS) Program. The 2017 Philippines NDHS is the latest demographic health survey carried out by the Philippine Statistics Authority (PSA) with support from the United States Agency for International Development. Desk research on relevant related literature and data analyses were conducted from April 8, 2020 to December 31, 2020.

The 2017 Philippines NDHS covered a national sample of over 31,000 households and more than 25,000 women aged 15-49 (PSA & ICF, 2018). Since the study was interested in looking at women's experiences on pregnancy, childbirth, and postnatal period, only those with at least one child were chosen using the "Total Children Ever Born" variable. The analysis relied on the women's recent births and excluded missing values.

Further analyses of the variables showed that, in terms of age, marital status, and educational attainment, there were not enough cases for separate categories of: a) "15-19", "40-44", and "45-49" age groups; b) "never married", "divorced/separated", and "widowed" under marital status; and c) "no education" under educational attainment. Therefore, women falling under these categories were excluded. The final sample considered in the study is composed of 4,754 women.

Pearson Chi-Square Test was used to determine correlations among women's background characteristics, exposure to mass media, and their maternal health care utilization. Variables which have significant relationship with the dependent variables were included in the model in the multivariate analysis. In establishing the relationship between the socio-demographic characteristics and exposure to mass media as dependent variables, a multinomial logistic regression was administered

for the following variables: frequency of reading newspaper or magazine, frequency of listening to radio, and frequency of using the internet during the previous month, while a binomial logistic regression was used for the frequency in watching television since it only has two categories.

To determine the significant contributing factors to Filipino women's utilization of maternal health care services in the Philippines, binomial logistic regression was executed, as the categories in all of the variables under maternal health care utilization are binary. Statistical Package for the Social Sciences (Version 26) was used in the statistical analysis.

In analyzing the relationship on the women's socio-demographic characteristics, exposure to mass media, and their utilization of maternal health care services, the study was guided by the conceptual framework presented in Figure 2.

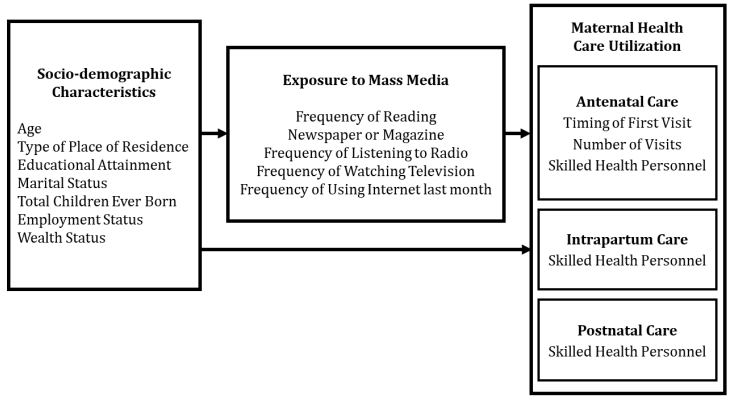


Figure 2. Framework in analyzing factors affecting maternal health care utilization among Filipino women

Dependent Variables

With women's utilization of maternal health care services as the main interest of this study, only the categories related to the WHO recommendations are presented in the discussion. In 2016, WHO presented a new ANC model where a pregnant woman is recommended to make her first ANC contact and the succeeding two and five contacts within 12 weeks, 20-26 weeks, and 30-40 weeks of gestation, respectively. Thus, the *Timing of the First ANC Visit* was classified as 1) third month or earlier (WHO recommendation) and 2) fourth month or later. On the other hand, the *Number of ANC Visits* was categorized as 1) seven times or lesser and 2) eight times or more (WHO recommendation).

WHO and UNICEF (2003) noted the importance of a skilled midwife or nurse, or lower-level health care workers because they can deliver most of the antenatal interventions to pregnant women. Nonetheless, a qualified doctor (obstetrician/gynecologist) is deemed necessary during an ANC visit of the mother, especially for complicated or risky pregnancies. For this study, *Skilled Health Personnel in ANC*, intrapartum care, and postnatal care was categorized as 1) doctor, nurse, or midwife (WHO recommendation) and 2) traditional birth attendant, barangay health worker, or others.

Intervening Variables

Exposure to mass media was measured based on the frequency of reading newspapers or magazines, listening to radio, watching television, and using the internet. A respondent is considered to have been regularly exposed to a particular form of media if she responded to have accessed it at least once a week (PSA & ICF, 2018).

In terms of frequency of reading newspapers or magazines and frequency of listening to radio, women were categorized into three: those who did not access, those who accessed fewer than once a week, and those who accessed at least once a week. Initially, the frequency of watching television had three categories. However, due to the inadequacy of cases, those who did not access a television and those who accessed less than once a week were collapsed in one category while those who accessed at least once a week formed another category. With regard to frequency of using the internet during the previous month, women were grouped into four categories, namely: those who did not access, those who accessed fewer than once a week, those who accessed at least once a week, and those who accessed almost every day in the past month. Internet use includes accessing web pages, email, and social media (PSA & ICF, 2018).

Independent Variables

The independent variables included in the study were the mother's age, type of place of residence, educational attainment, marital status, total children ever born, employment status, and wealth status. Mother's age was grouped into four: "20-24", "25-29", "30-34", and "35-39". Type of place of residence is either urban or rural. The mother's educational attainment was grouped into primary, secondary, and higher. Marital status was either married or living with a partner. Employment status was either employed or unemployed.

Wealth status was categorized as poorest, poorer, middle, richer, and richest. Using principal component analysis, the 2017 Philippines NDHS (PSA & ICF, 2018) assigned scores to each household based on the number and kinds of consumer goods they own. The categorization on wealth index was based on the following method (PSA & ICF, 2018):

> National wealth quintiles are compiled by assigning the household score to each usual (*de jure*) household member, ranking each person in the household population by her or his score, and then dividing the distribution into five equal categories, each comprising 20% of the population. (p. 8)

RESULTS AND DISCUSSION

Descriptive Analysis

The mean age of the women is 29.24 with most (64.9%) of them residing in the rural areas (Table 1). More than half (51.8%) of the women reached secondary level of education and a third (31.7%) attended higher level of education. Most (65.6%) of the women were married. On the average, women have three children with a third (30%) who have two children. Some (39.5%) of them were employed. Many (54.8%) fall under the poorer to poorest categories while a few (26.1%) may be classified in the richer to richest categories.

Table 2 shows the proportion of women by their exposure to mass media. There were more (53%) women who did not access a newspaper or magazine in a week than those who did (47%). For both exposure to radio and television, more than half had accessed during the week. In terms of usage of the internet, only a few (22.6%) went online almost every day during the past month.

In 2016, a study noted that in general, Philippine mass media operate on a commercial, free-enterprise system which relies on advertisements to gain revenue (Suva et al., 2016). While media may be free from control of the government, the authors noted that certain degree of pressure may arise from business and political interests. Among the forms of mass media in the Philippines, the authors mentioned that television and radio are the most popular, with television as the main source of information. The results of the study also noted the following: a) as of 2015, the Philippines is one of the heavy social media users in the world; b) schoolchildren are best reached by television; and c) newspapers are common among policy and decision makers.

Table 1. Distribution of women by socio-demographic characteristics

CHARACTERISTICS	FREQUENCY (n=4,754)	PERCENT
Age ($\bar{x}$=29.24)		
20-24	1,044	22.0
25-29	1,500	31.6
30-34	1,251	26.3
35-39	959	20.1
Type of Place of Residence		
Urban	1,668	35.1
Rural	3,086	64.9
Educational Attainment		
Primary	785	16.5
Secondary	2,462	51.8
Higher	1,507	31.7
Marital Status		
Married	3,120	65.6
Living with a partner	1,634	34.4
Total Children Ever Born ($\bar{x}$ = 2.64)		
1	1,241	26.1
2	1,440	30.3
3	962	20.2
4+	1,111	23.4
Employment Status		
Employed	1,878	39.5
Unemployed	2,876	60.5
Wealth Status		
Poorest	1,474	31.0
Poorer	1,133	23.8
Middle	908	19.1
Richer	718	15.1
Richest	521	11.0

Table 2. Women's exposure to mass media

EXPOSURE TO MASS MEDIA	FREQUENCY (n=4,754)	PERCENT
Frequency of Reading Newspaper or Magazine		
Not at all	2,520	53.0
Less than once a week	1,706	35.9
At least once a week	528	11.1
Frequency of Listening to Radio		
Not at all	1,447	30.4
Less than once a week	1,647	34.6
At least once a week	1,660	35.0
Frequency of Watching Television		
Less than once a week/Not at all	1,308	27.5
At least once a week	3,446	72.5
Frequency of using Internet last month		
Not at all	2,146	45.1
Less than once a week	621	13.1
At least once a week	912	19.2
Almost every day	1,075	22.6

Table 3 presents the relationship between women's exposure to mass media and their socio-demographic characteristics. Only the women's type of place of residence, employment status, and wealth status were found to have significant relationship with the rate by which they interact with the mass media.

Women's age, educational attainment, and number of children did not have significant variation in terms of the frequency of listening to the radio. The women's age and marital status did not show significant relationship to their television viewing habits. In view of this, these variables were not included in the multivariate analysis when testing for the determinants of women's exposure to mass media.

Table 4 presents the prevalence of maternal health care utilization with respect to their socio-demographic characteristics. In general, majority of the women had a skilled health personnel during their ANC (89%), intrapartum care (80.8%), and postnatal care (88.7%). Many (71.1%) had their first ANC visit on the third or earlier months of their pregnancies. Some (35%) had more than eight or more ANC visits.

Among the background characteristics, women's educational attainment, total children ever born, employment status, and wealth status were found to have significant relationship with their utilization of maternal health care services. The age and marital status of the women did not have significant variation in terms of their choice of health care providers during pregnancy and postnatal period. The same observation is true for the women's type of place of residence and health care providers they selected while pregnant. As such, said factors were no longer part of the multivariate analysis when testing for factors affecting women's decision on the type of health care providers of ANC and postnatal care.

Among mass media channels, frequency of watching television and using the internet during the previous month both significantly affected the maternal health care utilization of Filipino women across all pregnancy periods covered (Table 5). Considering that the frequency of listening to the radio has no significant association with the number of ANC visits and skilled health personnel during pregnancy, the former independent variable was excluded in the model in testing the significant contributing factors associated with the latter dependent variables. The frequency of reading newspapers or magazines was found to have significant relationship with almost all of the maternal health care indicators except for the women's choice for prenatal care provider. As such, frequency of reading newspaper or magazine was excluded in the

Table 3. Exposure to mass media by women's socio-demographic characteristics

CHARACTERISTICS	n (4,754)	FREQUENCY OF READING NEWSPAPER OR MAGAZINE			FREQUENCY OF LISTENING TO RADIO			FREQUENCY OF WATCHING THE TELEVISION		FREQUENCY OF USING THE INTERNET LAST MONTH			
		Not at All	Less Than Once a Week	At Least Once a Week	Not at All	Less Than Once a Week	At Least Once a Week	Less Than Once a Week/ Not at All	At Least Once a Week	Not at All	Less Than Once a Week	At Least Once a Week	Almost Every Day
Age			*									***	
20-24	1,044	12.5	7.6	1.9	6.4	7.7	7.8	6.4	15.5	8.3	4.0	4.4	5.3
25-29	1,500	16.7	11.3	3.4	9.6	10.8	11.2	8.2	23.3	13.0	4.3	6.6	7.5
30-34	1,251	13.5	9.6	3.2	8.0	9.3	9.0	7.2	19.2	12.2	3.1	5.1	5.9
35-39	959	10.3	7.4	2.6	6.4	6.8	7.0	5.7	14.5	11.6	1.7	3.1	3.8
Type of Place of Residence			***			***			***			***	
Urban	1,668	15.7	13.8	5.6	8.4	13.9	12.7	7.2	27.9	9.8	4.5	8.0	12.9
Rural	3,086	37.3	22.1	5.5	22.0	20.7	22.3	20.3	44.6	35.3	8.6	11.2	9.7
Educational Attainment			***						***			***	
Primary	785	11.5	4.5	0.6	5.4	5.4	5.7	7.2	9.4	13.8	1.3	1.0	0.5
Secondary	2,462	28.8	18.1	4.8	16.0	17.8	17.9	14.3	37.4	25.6	7.9	9.5	8.7
Higher	1,507	12.7	13.3	5.7	9.0	11.4	11.4	6.0	25.7	5.7	3.9	8.7	13.4
Marital Status						**						***	
Married	3,120	34.6	23.5	7.5	21.0	22.2	22.5	18.5	47.1	32.1	7.4	11.9	14.3
Living with a partner	1,634	18.4	12.4	3.6	9.4	12.4	12.5	9.0	25.4	13.0	5.7	7.3	8.3

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

Table 3 Continued...

CHARACTERISTICS	n (4,754)	FREQUENCY OF READING NEWSPAPER OR MAGAZINE			FREQUENCY OF LISTENING TO RADIO			FREQUENCY OF WATCHING THE TELEVISION		FREQUENCY OF USING THE INTERNET LAST MONTH			
		Not at All	Less Than Once a Week	At Least Once a Week	Not at All	Less Than Once a Week	At Least Once a Week	Less Than Once a Week/ Not at All	At Least Once a Week	Not at All	Less Than Once a Week	At Least Once a Week	Almost Every Day
Total Children Ever Born			***						***			***	
1	1,241	12.6	10.3	3.2	7.2	9.3	9.7	6.1	20.0	6.4	4.2	6.9	8.6
2	1,440	15.6	11.1	3.6	9.2	10.6	10.4	7.4	22.8	11.2	4.4	6.5	8.3
3	962	11.4	6.8	2.1	6.4	6.8	7.1	5.8	14.5	10.7	2.7	3.2	3.6
4+	1,111	13.4	7.7	2.2	7.6	7.9	7.8	8.2	15.2	16.8	1.8	2.6	2.1
Employment Status			***			**			***			***	
Employed	1,878	18.1	15.8	5.6	11.0	13.9	14.7	10.4	29.1	15.9	4.6	8.0	11.0
Unemployed	2,876	34.9	20.1	5.5	19.4	20.7	20.3	17.1	43.4	29.2	8.5	11.2	11.6
Wealth Status			***			***			***			***	
Poorest	1,474	19.7	9.6	1.7	10.5	9.7	10.7	15.6	15.4	23.8	3.3	2.5	1.4
Poorer	1,133	13.4	8.5	1.9	7.4	8.1	8.4	5.3	18.5	12.5	3.6	4.9	2.9
Middle	908	9.7	6.9	2.6	5.8	6.6	6.7	3.2	15.9	6.0	3.3	4.9	4.9
Richer	718	6.7	6.0	2.4	3.8	6.2	5.1	2.1	13.0	2.3	2.0	4.6	6.2
Richest	521	3.5	4.9	2.5	2.9	4.0	4.1	1.3	9.7	0.5	0.9	2.3	7.2

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

Table 4. Prevalence of maternal health care utilization by women's socio-demographic characteristics

CHARACTERISTICS	FREQUENCY (n=4,754)	ANTENATAL CARE (%)			INTRAPARTUM CARE (%)	POSTNATAL CARE (%)
		Third Month or Earlier First Visit	Eight or More Number of Visits	Doctor, Nurse, or Midwife as Skilled Health Personnel	Doctor, Nurse, or Midwife as Skilled Health Personnel	Doctor, Nurse, or Midwife as Skilled Health Personnel
Age		*	***		*	
20-24	1,044	14.9	6.5	19.2	17.4	19.2
25-29	1,500	22.9	11.0	28.0	25.5	27.8
30-34	1,251	19.2	10.5	23.4	21.9	23.4
35-39	959	14.1	7.0	18.4	16.0	18.3
Type of Place of Residence		***	***		***	***
Urban	1,668	26.2	15.0	31.6	31.6	31.9
Rural	3,086	44.9	20.0	57.4	49.2	56.8
Educational Attainment		***	***	***	***	***
Primary	785	10.1	3.3	13.5	9.4	13.1
Secondary	2,462	36.1	16.6	46.4	42.6	46.2
Higher	1,507	24.9	15.1	29.1	28.8	29.4
Marital Status		***	**		***	
Married	3,120	47.7	23.8	58.0	51.8	58.0
Living with a partner	1,634	23.4	11.2	31.0	29.0	30.7

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

Table 4 Continued...

CHARACTERISTICS	FREQUENCY (n=4,754)	ANTENATAL CARE (%)			INTRAPARTUM CARE (%)	POSTNATAL CARE (%)
		Third Month or Earlier First Visit	Eight or More Number of Visits	Doctor, Nurse, or Midwife as Skilled Health Personnel	Doctor, Nurse, or Midwife as Skilled Health Personnel	Doctor, Nurse, or Midwife as Skilled Health Personnel
Total Children Ever Born		***	***	*	***	***
1	1,241	19.8	10.9	23.8	23.0	23.8
2	1,440	22.7	11.2	27.0	25.1	27.1
3	962	14.2	7.0	17.9	16.3	17.7
4+	1,111	14.4	5.9	20.3	16.4	20.1
Employment Status		***	***	**	*	**
Employed	1,878	29.8	16.0	35.8	32.6	35.8
Unemployed	2,876	41.3	19.0	53.2	48.2	52.9
Wealth Status		***	***	***	***	***
Poorest	1,474	19.5	6.4	26.1	19.5	25.7
Poorer	1,133	16.1	6.8	21.5	19.3	21.3
Middle	908	13.6	7.1	17.1	16.9	17.3
Richer	718	12.1	7.6	14.0	14.4	13.9
Richest	521	9.8	7.1	10.3	10.7	10.5

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

Table 5. Prevalence of maternal health care utilization by women's exposure to mass media

EXPOSURE TO MASS MEDIA	FREQUENCY (n=4,754)	ANTENATAL CARE (%)			INTRAPARTUM CARE (%)	POSTNATAL CARE (%)
		Third Month or Earlier First Visit	Eight or More Number of Visits	Doctor, Nurse, or Midwife as Skilled Health Personnel	Doctor, Nurse, or Midwife as Skilled Health Personnel	Doctor, Nurse, or Midwife as Skilled Health Personnel
Frequency of Reading Newspaper or Magazine		***	***		***	***
Not at all	2,520	36.3	16.6	46.7	40.6	46.2
Less than once a week	1,706	26.4	13.6	32.3	30.1	32.2
At least once a week	528	8.4	4.8	10.0	10.1	10.3
Frequency of Listening to Radio		**			***	***
Not at all	1,447	20.7	10.5	26.9	23.5	26.0
Less than once a week	1,647	24.9	12.2	30.6	28.3	30.7
At least once a week	1,660	25.5	12.3	31.5	29.0	32.0
Frequency of Watching the Television		***	***	***	***	***
Less than once a week/ Not at all	1,308	18.2	7.7	23.3	18.8	23.2
At least once a week	3,446	52.9	27.3	65.7	62.0	65.5
Frequency of Using Internet Last Month		***	***	***	***	***
Not at all	2,146	28.0	10.5	38.9	31.1	38.1
Less than once a week	621	9.9	5.1	11.6	11.4	12.1
At least once a week	912	14.8	7.7	17.6	17.2	17.4
Almost every day	1,075	18.4	11.7	20.9	21.1	21.1

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

model in testing for factors affecting women's decision to seek care from a skilled health personnel during pregnancy.

Multivariate Analysis

Socio-demographic Characteristics and Exposure to Mass Media

This section presents the results of the analysis showing the cause-and-effect relationship between the socio-demographic characteristics (independent variables) and exposure to mass media (dependent variables). In Table 6, for every one-unit increase in the number of children, the multinomial log-odds of reading a newspaper or magazine less than once a week to not at all would be expected to decrease by 0.95 unit while holding all other variables in the model constant. Women in the urban areas are more likely than those in the rural areas to prefer reading the newspaper or magazine at least once a week to not at all. Those with primary and secondary education are less likely than those with higher education to prefer reading the newspaper or magazine at least once a week to not at all. Compared with non-exposure to newspaper or magazine, the probability of reading newspaper or magazine less than once a week and at least once a week is 1.37 and 1.52 times more for women who are employed than those who are not working. Women in the richest category are more likely than those in the lower status to prefer reading the newspaper or magazine at least once a week than none at all.

Holding other variables in the model constant, women who are residing in the rural areas and who are unemployed are more likely than their counterparts to prefer not listening to radio programs over listening at least once a week (Table 7).

Wealth is the only socio-demographic characteristic which has a significant and positive effect on the rate by which women watch television shows (Table 8). Women in the richest category of wealth status are seven times more likely to watch television shows at least once a week than those in the poorest category.

Holding other variables in the equation constant, the same observation on the direction and significance of the relationship between women's socio-demographic characteristics (namely, number of children, place of residence, educational attainment, employment status, and wealth status) and the occurrence by which they read the newspaper or magazine can still be seen on the rate by which they use the internet

Table 6. Multinomial logistic regression showing significant effects on women's frequency of reading newspaper or magazine by their socio-demographic characteristics

SOCIO-DEMOGRAPHIC CHARACTERISTICS	FREQUENCY OF READING NEWSPAPER OR MAGAZINE (Not at All - Reference Category)			
	Less Than Once a Week		At Least Once a Week	
	Exp(B)	B	Exp(B)	B
Total Number of Children	0.95*	-0.05	1.01	0.01
Respondent's Current Age	1.01	0.01	1.01	0.01
Type of Place of Residence				
Urban	1.28***	0.25	1.69***	0.53
Rural (ref)				
Educational Attainment				
Primary	0.51***	-0.67	0.19***	-1.65
Secondary	0.73***	-0.32	0.54***	-0.62
Higher (ref)				
Marital Status				
Married	0.97	-0.03	0.98	-0.02
Living with a partner (ref)				
Wealth Status				
Poorest	0.63***	-0.47	0.33***	-1.12
Poorer	0.69***	-0.38	0.38***	-0.97
Middle	0.67***	-0.40	0.57***	-0.57
Richer	0.73**	-0.32	0.58***	-0.54
Richest (ref)				
Employment Status				
Employed	1.37***	0.31	1.52***	0.42
Unemployed (ref)				

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

Table 7. Multinomial logistic regression showing significant effects on women's frequency of listening to radio by their socio-demographic characteristics

SOCIO-DEMOGRAPHIC CHARACTERISTICS	FREQUENCY OF LISTENING TO RADIO (At Least Once a Week - Reference Category)			
	Not at All		Less Than Once a Week	
	Exp(B)	B	Exp(B)	B
Type of Place of Residence				
Urban	0.708***	-0.345	1.119	0.112
Rural (ref)				
Marital Status				
Married	1.225	0.203	1.029	0.029
Living with a partner (ref)				
Wealth Status				
Poorest	1.136	0.128	0.939	-0.063
Poorer	1.076	0.074	1.001	0.001
Middle	1.139	0.13	1.005	0.005
Richer	1.055	0.054	1.23	0.207
Richest (ref)				
Employment Status				
Employed	0.779**	-0.249	0.901	-0.105
Unemployed (ref)				

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

Table 8. Binomial logistic regression showing significant effects on women's frequency of watching television by their socio-demographic characteristics

SOCIO-DEMOGRAPHIC CHARACTERISTICS	FREQUENCY OF WATCHING TELEVISION (At Least Once A Week – Reference Category)	
	Exp(B)	B
Total Children Ever Born	0.977	-0.023
Type of Place of Residence		
Urban	1.001	0.001
Rural (ref)		
Educational Attainment		
Primary (ref)	1.2	0.182
Secondary	1.125	0.118
Higher		
Employment Status		
Employed	0.91	-0.095
Unemployed (ref)		
Wealth Status		
Poorest (ref)		
Poorer	3.413***	1.228
Middle	4.814***	1.572
Richer	5.943***	1.782
Richest	7.614***	2.03

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

(Table 9). In addition, for every additional year in the women's age, the multinomial log-odds of preferring to access the internet almost every day to not at all would be expected to decrease by 0.094 unit.

Determinants of Maternal Health Care Utilization in the Philippines

Coefficients presented in Table 10 are expressed as ratios of the odds of having ANC during the third month or earlier, having eight or more ANC visits, and having a doctor, nurse, or midwife as ANC, intrapartum care, and postnatal care provider, as compared with the odds for the reference category in each variable.

The results show that, except for the frequency of reading newspaper or magazine, all factors included in the model have significant and independent association with at least one type of the recommended maternal health care utilization.

All other things being equal, a one-unit increase in the age of the mother raises the odds of getting an ANC on the third month or earlier in the pregnancy, having eight or more ANC visits, and being attended by a skilled health personnel during childbirth. On the other hand, the higher the number of children ever born, the less likely that the mothers fulfilled the necessary ANC recommendations and have a skilled health personnel as childbirth attendant. This is consistent with the results in the study of Horiguchi and Nakazawa (2018) where they equated women with many pregnancy experiences would have the tendency to think they have enough knowledge to take care of themselves.

Women in the urban areas have 20% and 41% higher odds of having eight or more ANC visits and being attended by a skilled health personnel during childbirth, than women in the rural areas. This is highly likely since there are more health centers, higher number of qualified health care professionals, and larger budgets allocated to health services in urban areas (Cananua-Labid, 2017).

Increasing education is associated with greater likelihood of having skilled health personnel as ANC, intrapartum care, and postnatal care provider. The odds of being attended by a doctor, nurse, or midwife during pregnancy, childbirth, and after delivery are more than 50% higher among those with at least secondary and higher education compared to women with primary education. More specifically, childbirths among women with secondary and higher education are nearly two times more likely to be attended by a skilled health personnel. This may be

Table 9. Multinomial logistic regression showing significant effects on women's frequency of using the Internet last month by their socio-demographic characteristics

SOCIO-DEMOGRAPHIC CHARACTERISTICS	FREQUENCY OF USING THE INTERNET LAST MONTH (Not at All - Reference Category)					
	Less Than Once a Week		At Least Once a Week		Almost Every Day	
	Exp(B)	B	Exp(B)	B	Exp(B)	B
Total Number of Children	0.803***	-0.22	0.776***	-0.254	0.808***	-0.214
Respondent's Current Age	0.939***	-0.063	0.939***	-0.063	0.911***	-0.094
Type of Place of Residence						
Urban	1.262**	0.233	1.533***	0.427	2.351***	0.855
Rural (ref)						
Educational Attainment						
Primary	0.238***	-1.434	0.121***	-2.116	0.065***	-2.732
Secondary	0.562***	-0.577	0.365***	-1.007	0.272***	-1.301
Higher (ref)						
Marital Status						
Married	0.624***	-0.472	0.711**	-0.341	0.678***	-0.388
Living with a partner (ref)						
Wealth Status						
Poorest	0.112***	-2.191	0.051***	-2.972	0.011***	-4.486
Poorer	0.201***	-1.604	0.15***	-1.897	0.032***	-3.43
Middle	0.323***	-1.13	0.246***	-1.401	0.083***	-2.485
Richer	0.442***	-0.817	0.456**	-0.786	0.196***	-1.631
Richest (ref)						
Employment Status						
Employed	1.056	0.055	1.202	0.184	1.335**	0.289
Unemployed (ref)						

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

Table 10. Binomial logistic regression analyses predicting the odds of maternal health care utilization among Filipino women

SOCIO-DEMOGRAPHIC CHARACTERISTICS AND EXPOSURE TO MASS MEDIA	ANTENATAL CARE						INTRAPARTUM CARE		POSTNATAL CARE	
	Third Month or Earlier First Visit		Eight or More Number of Visits		Doctor, Nurse, or Midwife as Skilled Health Personnel		Doctor, Nurse, or Midwife as Skilled Health Personnel		Doctor, Nurse, or Midwife as Skilled Health Personnel	
	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)	B
Age	1.02**	0.02	1.03***	0.03			1.04***	0.04		
Type of Place of Residence										
Urban	0.95	-0.05	1.20*	0.18			1.41***	0.34	1.00	0.00
Rural (ref)	1.00		1.00				1.00		1.00	
Educational Attainment										
Primary (ref)	1.00		1.00		1.00		1.00		1.00	
Secondary	1.05	0.05	1.21	0.19	1.50***	0.40	1.97***	0.68	1.68***	0.52
Higher	0.95	-0.05	1.25	0.22	1.52**	0.44	1.98***	0.68	1.91***	0.65
Marital Status										
Married	1.31***	0.27	1.19*	0.17			0.72**	-0.33		
Living with a partner (ref)	1.00		1.00				1.00			
Total Children Ever Born	0.87***	-0.14	0.90***	-0.11	0.98	-0.02	0.87***	-0.14	0.94	-0.07
Employment Status										
Employed	1.25**	0.22	1.24***	0.22	1.22	0.20	0.932	-0.07	1.19	0.17
Unemployed (ref)	1.00		1.00		1.00		1.00		1.00	
Wealth Status										
Poorest (ref)	1.00		1.00		1.00		1.00		1.00	
Poorer	1.04	0.04	1.218*	0.20	1.39*	0.33	1.61***	0.48	1.30*	0.27
Middle	1.07	0.07	1.49***	0.40	1.20	0.18	2.12***	0.75	1.34	0.30
Richer	1.55**	0.44	2.23***	0.80	1.61*	0.48	4.29***	1.46	1.44	0.36
Richest	2.79***	1.02	3.36***	1.21	2.00*	0.71	6.62***	1.89	2.79***	1.02

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

Table 10 Continued...

SOCIO-DEMOGRAPHIC CHARACTERISTICS AND EXPOSURE TO MASS MEDIA	ANTENATAL CARE						INTRAPARTUM CARE		POSTNATAL CARE	
	Third Month or Earlier First Visit		Eight or More Number of Visits		Doctor, Nurse, or Midwife as Skilled Health Personnel		Doctor, Nurse, or Midwife as Skilled Health Personnel		Doctor, Nurse, or Midwife as Skilled Health Personnel	
	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)	B
Frequency of Reading Newspaper or Magazine										
Not at all (ref)	1.00		1.00				1.00		1.00	
Less than once a week	1.01	0.01	1.00	0.00			1.075	0.072	0.96	-0.04
At least once a week	0.91	-0.10	0.94	-0.06			1.385	0.326	1.08	0.08
Frequency of Listening to Radio										
Not at all (ref)	1.00						1.00		1.00	
Less than once a week	1.08	0.07					1.048	0.047	1.21	0.19
At least once a week	1.15	0.14					1.132	0.124	1.69***	0.53
Frequency of Watching the Television										
Less than once a week/ Not at all (ref)	1.00		1.00		1.00		1.00		1.00	
At least once a week	1.03	0.03	1.02	0.02	1.33*	0.29	1.51***	0.411	1.23*	0.21
Frequency of Using Internet Last Month										
Not at all (ref)	1.00		1.00		1.00		1.00		1.00	
Less than once a week	1.69***	0.53	1.68***	0.52	0.96	-0.04	1.55***	0.441	1.69**	0.53
At least once a week	1.59***	0.47	1.41**	0.34	1.18	0.16	1.56***	0.446	1.03	0.03
Almost every day	1.70***	0.53	1.68***	0.52	1.12	0.09	1.68***	0.523	1.33	0.29

Note: *P ≤ 0.05 **P ≤ 0.01 ***P ≤0.001

due to educated women being more independent, more informed about healthcare, and have greater power about health-related decisions (Saad–Haddad et al., 2016).

Set side by side with the bivariate analysis presented in Table 4, the multivariate analysis also shows that marital status remains to be significantly related to three indicators of maternal health care utilization. Compared with women living with their partners, married women are more likely to seek ANC during the third month or earlier in their pregnancies, have eight or more ANC visits, and have a skilled health personnel attend their childbirths by a factor of 1.31, 1.19, and 0.72, respectively.

In contrast to those who belong to the poorest category in terms of wealth status, women who belong to the richest category are nearly thrice more likely in seeking early ANC in their pregnancies and in having a skilled health personnel in their postnatal period; twice more likely in having a doctor, nurse, or midwife as ANC provider; more than three times possible to have eight or more ANC visits; and six times more probable in being attended by a skilled health personnel in their childbirths. These results are consistent with the study of Saad-Haddad et al. (2016) across seven countries: Bangladesh, Cambodia, Cameroon, Nepal, Peru, Senegal, and Uganda. They found household wealth to be an important determinant of ANC initiation where women from poorer households are less likely to initiate care and, for those who really sought antenatal care, were less likely to follow the recommended number of ANC visits. Pro-rich facility-based deliveries were also noted in the study of Paredes (2016). Using 2008 and 2013 DHS in the Philippines, he noted that, while there is a pro-poor shift in terms of health facility deliveries in government and private facilities where there is an apparent increase in use among women in lower income bracket, household wealth remains a strong contributor to the inequalities in facility-based deliveries.

Women who listened to the radio during the week have 69% likelihood of being attended by a skilled health personnel during their postnatal period, compared to women who did not listen to the radio. Those who watched the television at least once a week are more than 20% likely to have a skilled health personnel from pregnancy, childbirth, to postnatal period, compared with those who only watched television less than once a week to no viewing at all. Greater awareness on the recommended health care through exposure to the radio and television also sits well with the analysis of Naveena (2015). In the said study, use of mass media was found to be an effective strategy in persuading and

reminding the intended audience about a critical information. Naveena (2015) also noted that televisions may be viewed as an essential communication force, which may cater advertisements and health programs.

The odds of complying with the recommended ANC, intrapartum care, and postnatal care increase as the frequency of using the internet also increases. Women who accessed the internet almost every day during the previous month are 70% more likely to seek ANC in their third month or earlier months in their pregnancies and have eight or more ANC visits than those who did not access the internet at all. It is also worth mentioning that either at least once a week or less than once a week internet use has a significant difference in being attended by skilled health personnel as the women's intrapartum care providers. In contrast to those who did not access the internet in the previous month, women who accessed the internet at least once a week and less than once a week in the same period have 55% likelihood of being attended by a skilled health personnel during their childbirth. Also, women with less than once a week access to the internet could already provide a 69% likelihood of being attended by a doctor, nurse, or midwife during their postnatal period, compared with those who did not use the internet in the previous month.

As shown in the study of Igbinoba et al. (2020), more experience in the usage of technology, such as the internet, already influences women's knowledge on the necessary maternal health care service utilization. Javanmardi et al. (2018) found that women usually access the internet to gain understanding on what to expect (fetal development as well as symptoms and complications of pregnancy) and what to do (prenatal tests and nutrition) while pregnant. Internet access also boosts confidence among women as they gain further knowledge and awareness regarding pregnancy (Bert et al., 2013). Searching the internet regarding health-related topics gives women the comfort in knowing that others may be experiencing the same, and that they are not alone (Bernhardt & Felter, 2004).

CONCLUSION AND RECOMMENDATIONS

While the quarantine measures imposed by the government considerably contained the spread of COVID-19 virus, the lockdowns also led to restricted mobility particularly for pregnant women who needed to seek care for their prenatal, intrapartum, and, later on, postnatal care. This situation led this study to look into the determinants, which affect

women's maternal health care utilization and also explored the use of mass media in bridging the gap to ensure that Filipino women are able to access maternal health care services remotely.

In the bivariate analysis, among the socio-demographic characteristics, women's type of place of residence, employment status, and wealth status were found to have significant relationship to how frequently they read newspaper or magazine, listen to radio, watch television, and use the internet. Women's educational attainment, number of children, employment status, and wealth status have significant relationship with their utilization of maternal health care services. In terms of exposure to mass media, frequency of watching television and using internet have shown to significantly affect women's use of all health care services during pregnancy, childbirth, and postnatal period.

In the multivariate analysis, women in the rural area, unemployed, and in the lower wealth status are less likely than their counterparts to access at least one form of mass media. In addition, among the forms of exposure to mass media in the study, women's use of the internet, especially those who use it every day, is the one that has the highest potential of influencing women to access maternal health care services from pregnancy, childbirth, and postnatal.

In view of these results, the recommendations of the study cover those that can be implemented by the national government and local government units (LGUs). To mobilize a well-organized, effective, and efficient delivery of online maternal health care services at the national and local level, the national government must first ensure competitive internet access nationwide.

The government may also intensify the internet connectivity of government hospitals so that doctors would be able to conduct prenatal care check-ups online. While doctors may already do online consultation services at their homes, they should at least be given the option to still do the same whenever they are in the government hospitals especially when emergency cases happen in remote areas. Online check-ups would enable doctors to advice their patients the best time to visit a health facility, especially those who may be considered in risky pregnancies. The relevance of having a licensed physician in administering ANC to pregnant women can never be overemphasized. Further, the findings of the analysis specifically show that women who are in the least affluent situation are less likely to follow the required health care services. Therefore, it is most ideal if online consultations could be made available

free of charge or at least with minimal fee for those accessing government hospitals.

To increase social media presence of the government's maternal health care services, the government may consider partnering with private organizations (POs) and non-government organizations (NGOs) to help in disseminating key messages regarding maternal health care. POs and NGOs, which share the same mission in ensuring safe pregnancy and motherhood among Filipino women, may play a part by sharing these key messages to their followers in their social media platforms.

In terms of content, the key messages may be reproduced in various dialects to suit different localities. The key messages may also emphasize that each pregnancy and childbirth is unique. Having had a complications-free pregnancy and childbirth does not guarantee that succeeding experiences would be the same, more so in a state of pandemic. Through this initiative, women are given the highest knowledge about how, when, where, and whom to seek treatment for basic and emergency obstetric circumstances, particularly for those who are pregnant or about to give birth.

At the local level, the LGU may consider providing internet-ready gadgets (such as laptops and tablets) to BHCs and RHUs. Women who lack such equipment may visit their nearest BHCs and RHUs to consult with their doctors online. Some LGUs may also consider providing monthly data allowance to pregnant women who may have the necessary gadget to connect online but may be unable to buy internet data due to financial constraints. The most favorable is for the LGUs to put in place free internet access for the whole municipality.

At the outset, barangay health workers may do house-to-house visits to inform the community about availability and method of accessing the online maternal health care services in their LGU. Municipal health workers may also be provided with necessary training on how to address concerns that may be brought to their attention via online messaging. Some concerns of pregnant women, such as inquiries on the schedule of tetanus toxoid immunization in the area, distribution of prenatal care vitamins, and seminars for pregnant women, may already be addressed by a local health worker.

The study also showed that exposure to radio and television would considerably increase the likelihood of women being attended by a skilled health personnel from pregnancy to postnatal period. For remote areas which can only be reached through television and radio,

the government may consider partnering with media networks to place promotional materials regarding antenatal, intrapartum, and postnatal care in the local area for free.

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