Utilization of Antenatal Care Services in Sumbuk Village, South Sikkim

A Dissertation Submitted

To

Sikkim University

In Partial Fulfilment of the Requirement for the

Degree of Master of Philosophy

By

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Date: 07.02.2020

DECLARATION

I, **Rebaka Rai**, hereby declare that the research work embodied in the dissertation titled "**Utilization of Antenatal Care Services in Sumbuk Village, South Sikkim**" submitted to Sikkim University for the award the degree of Master of Philosophy, is my original work and it has not been submitted earlier to this or any other University for any degree.

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CERTIFICATE

This is to certify that the M.Phil. dissertation, entitled "**Utilization of Antenatal Care Services in Sumbuk Village, South Sikkim**" submitted by Rebaka Rai bearing Roll No. 18MPAN02 and Registration No.18/M.Phil/ANT/02 dated 17.05.2019, in partial fulfilment of the requirements for the award of the degree of Master of Philosophy (M.Phil.) of Sikkim University has not been previously published nor submitted for any degree to Sikkim University or any other university.

She has fulfilled all the necessary requirements of M.Phil. Regulations of Sikkim University for the submission of her dissertation. This dissertation is an outcome of her fieldwork and investigation. To the best of my knowledge this is her original work. She has completed this dissertation under my supervision and guidance.

I hereby forward the dissertation for evaluation and necessary action.

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"Utilization of Antenatal Care Services in Sumbuk Village, South Sikkim"

Submitted by **Miss Rebaka Rai** under the supervision of **Dr. James V. Haokip, Assistant Professor, Department of Anthropology, School of Human Sciences, Sikkim University.**

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Gangtok **Rebaka Rai**

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Map showing fieldwork area (Sumbuk Village, South Sikkim)

CHAPTER I

INTRODUCTION

The present study is about the Antenatal Care Visits among the women of Sumbuk village. “Antenatal care, or prenatal care, is the care given to pregnant mother so that they have a safe pregnancy and a healthy childbirth” (Rooney & WHO, 1992; Abosse et al., 2010; Arop, 2015; Ali et al., 2018). Antenatal care has been defined by the World Health Organization as the care provided by skilled health care professionals to pregnant women and adolescents girls in order to ensure the best health conditions for both mother and baby during pregnancy (World Health Organization, 2016). “Antenatal care is expected to have impact on the development of the fetus and the infant as well as mother and this can be achieved through early booking and regular attendance of antenatal clinic” (Onasoga et al., 2012).

Previous studies revealed that four ANC visits would be adequate for normal pregnancies, which has also been recommended by the World Health Organization (WHO, 2006; Simkhada et al., 2008; Abosse et al., 2010; Arop, 2015; Manuswamy et al., 2014;Bhagwan et al., 2016). Similarly, minimum of four antenatal care visits has suggested by the Indian Public Health Standards and operational guidelines on Maternal and Newborn Health for safe pregnancy and good maternal and child health outcomes (National Rural Health Mission, 2010).“Antenatal care is recognized as a major component of comprehensive maternal health care’’ (Ali and Abdalla, 2016). It is optimistic approach to overcome the prospective hindrance before and after delivery. To give information and advice to pregnant mother about various complications that arise during pregnancy and to provide curative measures for early diagnosis are the most important part of antenatal care. In addition, Antenatal care

play a significant role in preparing a pregnant mother and her family for childbirth by establishing confidence and friendly atmosphere between the pregnant woman and antenatal health care service provider (Chandhiok et al., 2005).

Globally, the major causes for maternal mortality are obstetric hemorrhage, hypertension, abortion, sepsis, HIV, preexisting medical disorders and other indirect causes like anemia (Villar et al., 2003; Say et al., 2014; Ronsmans et al., 2006; Khan et al., 2006; Clark et al., 2008; Arop, 2015; Fekadu et al., 2018). Approximately 810 women died every day in low and middle –income countries. The United Nations International Children's Emergency Fund (UNICEF) estimated that 44,000 women die annually, due to preventable pregnancy –related causes in India (UNICEF, 2019).

According to Bloom et al., (1999) and Patel et al., (2016) antenatal care is one of the pillars of the Safe Motherhood Initiative. "Antenatal care (ANC) is a key strategy to decreasing maternal mortality in low-resource settings. ANC clinics provide resources to improve nutrition and health knowledge and promote preventive health practices" (Ahirwar, 2018).To achieve good maternal health and safe childbirth outcomes is the main aim of antenatal care visits during pregnancy. It can detect and prevent early pregnancy related complication" (Shekawat et al., 2018). For example, during antenatal visits "a pregnant woman's blood pressure can be monitored during her pregnancy through an ultrasound examination; severe anaemia due to deficiencies in iron and foliate can be corrected by introducing iron and folate acid into the mother's diet; and dietary interventions during pregnancy can help to reduce the risk of gestational weight gain" (Arop, 2015; Thangaratinam et al., 2012). The various services under ANC visits include clinical check-up of blood test to estimate hemoglobin, measurement of height and weight, examination of abdomen, urine test to estimate sugar and albumin, fetal examination through ultrasound, tetanus toxoid

vaccination and supplementation of iron and folic acid tablets (Manuswamy et al., 2014).

“In addition, prenatal care provision can create a friendly atmosphere for care providers and mothers, which is a prerequisite for safe delivery” (Bbaale, 2011; Hajizadeh et al., 2016).During first antenatal visits, an expectant mother is registered with a health care card which includes various contents of antenatal care services. This health card is the record of the pregnancy and is filled in whenever the pregnant women go for an antenatal check-up (Ali et al., 2018). Timing of first ANC visit has been shown to predict the provision of interventions recommended by WHO (Andrew et al., 2014; Agha et al., 2016; Yeoh et al., 2016; Yaya et al., 2017).

A recent examination on antenatal care visits shows that four time antenatal visits during pregnancy can produce safe and healthy childbirth (Matthews et al., 2001).During Antenatal care visits, “mothers can be informed about the warning signs and symptoms during pregnancy, preventive care and treatment strategies, proper nutrition, breastfeeding, and use of contraceptive methods for family planning” (Bbale, 2011; Hazizadeh et al., 2016;). “Moreover, adequate prenatal care visits facilitate the follow-up and monitoring of fetal growth and maternal health by physicians” (Hazizadeh et al., 2016). For example, “pregnant women are usually advised about their deliveries based on their pregnancy situation that is vaginal delivery vs caesarean section” (Tewodros et al., 2009; Sharma, 2002; Arop. 2012; Dyeli, 2012). “In fact, delayed care provision can result in missed opportunities for the diagnosis of gestational hypertension, gestational diabetes, or sexually transmitted diseases’’ (Hazizadeh et al., 2016). Further, during antenatal visits pregnant woman and their families make aware about the need of care at the time of delivery and also

to make them familiar with available health facilities and to ensure them what to do in case of any emergency (Sai et al., 1992; Graham et al., 1996; Chandhiok et al., 2006)

"ANC allows providers to prevent, detect, and manage obstetric complications, and is associated with a reduced risk of maternal mortality, premature birth, and low birth weight" (Ketterlinus et al., 1990; Abdal et al., 2012;Beeckman et al., 2013;Dansereau et al., 2016). "ANC is particularly important for poor women, who frequently face obstetric risk factors such as inadequate nutrition, limited education, and low health literacy" (Triunfoet al., 2015;Dansereau et al., 2016).

Antenatal care is the crucial factor for safe motherhood (Nair et al., 2008; Shekawat et al., 2018). Maternal mortality rate can be reduced, but all the pregnant mothers need access to antenatal care (Chopra et al., 2018). "A major means of improving maternal healthcare is strengthening antenatal care, which is a major component of maternal health services. This brings the expectant mother closer to the care giver and increases her chances of survival through the use of other services that accompany the antenatal care" (Akowuah et al., 2018).

Unfortunately, many women in developing countries including India do not receive such care and services (Yoshida et al., 2010; Laishram et al., 2013). Antenatal Care (ANC) utilization facility is provided but many pregnant women are not able to utilize those facilities because of many socio-demographic and cultural determinants (Chopra et al, 2018).

"Many countries have made targeted efforts to ensure the provision and utilization of timely and adequate ANC" (Bbaale, 2011; Hajizadeh et al., 2016). "Antenatal care (ANC) has been established in high income countries for a long time and has brought about remarkable achievements in reducing maternal and neonatal mortality. Most of

the low and middle income countries have applied the same ANC programmes used in high income countries with some adjustments for local contexts" (Tran et al., 2011). "The use of ANC varies between countries with a great underutilization among pregnant women in low income countries in Africa and Asia" (Tran et al., 2011). "Within a country, ANC utilization also differs according to the mother's age, education, occupation, household income, parity, place of residence, cost and availability of services" (Tran et al.,2011).

According to the National Family Health Survey (NFHS) of India (2015-2016), only 16.7 % women in rural area go for full antenatal care as prescribed mandatory by the Government norms ANC in India. (In India, the Reproductive and Child Health Programme plan to provide antenatal care by including all the clinical examination which is required for pregnant woman such as measurement of weight, blood pressure, examination of abdomen, tetanus immunization and supplementation of iron and folic acid etc., (Bhimani et al., 2016).

In India, most of the population have poor knowledge of antenatal and intranatal care available to them. "The reason being lack of proper antenatal care coverage and lack of awareness among mothers particularly from rural parts of India, contributing the major population, about the need of early registration and compliance with proper and regular antenatal checkups"(Ahirwar, 2018). "Although numerous health programs are in vogue which are run by the Government of India, State governments and also initiated by numerous Non Government Organizations (NGOs), the scenario of coverage of ante natal care in India is far from satisfactory" (Ahirwar, 2018).

Although antenatal care has a tremendous impact on the health of the mother and child, good quality antenatal care is not uniformly distributed in society" (Bhimani et

al., 2016). “Advancements in technology have made sophisticated tertiary care available to those who can pay. At the same time, the gap between the rich communities and the poor, marginalized, and underserved communities is increasing” (Bhimani et al., 2016). “There is a sharp distinction between states and between rural and urban areas. This could be related to several factors, an important one being non-utilization or under-utilization of maternal health-care services, especially amongst the rural poor and urban slum population due to inaccessibility, illiteracy, cultural factors which have significant relationship as a determinant of maternal & child health in population” (Bhimani et al., 2016). “For effective implementation of the programs, understanding of the factors affecting the utilization of antenatal care services during pregnancy is very essential. If these factors are correctly identified, then the program efforts can be concentrated to increase the acceptance or utilization rates” (Bhimani et al., 2016).

Statement of the Problem

Maternal and reproductive health in general, and antenatal care in particular, is a social phenomenon as much as a medical event, where access to and use of maternal and reproductive health care services are determined by factors specific to a region which can be described as contextual factors. Reducing maternal mortality and achieving universal access to reproductive health care are the two main approaches of Millennium Development Goal (MDG5). Under MDG5, India has committed to reduce maternal mortality to 108 deaths per 100,000 live births by 2015 (Sanneving et al., 2013). But, due to poor maternal health condition, India was unable to reach its goal within the time period. Antenatal Care (ANC) service is one of the major parts and the primary stage relating to maternal health services.

It has been noted that the maternal health status of Indian women is lower as compared to other developed nations. In 1987, Safe Motherhood Initiatives were launched by the World Health Organization which aimed to reduce the number of deaths associated with pregnancy and childbirth (Patel et al., 2016). But due to a number of socio-economic and cultural reasons most expecting women are reluctant to avail these health services (Asim et al., 2017).

In 2005, National Rural Health Mission (NRHM) was launched by Government of India to give special recognition and care for women for upgrading the condition of maternal health. Within the framework of NRHM many safe motherhood initiatives was taken to protect maternal health including Antenatal Care (ANC) services under its framework (Devi, 2017). Evidence shows that women in low and middle-income countries, who are poor, less educated, and livings in rural areas have lower ANC coverage and worse pregnancy outcomes than more advantaged women do in the same countries (Save the Children, 2018).

Thus, it is evident that "studies conducted in India and globally recognizes the contribution of the antenatal care (ANC) not only in sustaining better maternal health but also in reducing maternal mortality and morbidity" (Adhikari et al., 2016). Many studies conducted across India have also shown lower utilization rates of these services (Bhagwan et al., 2016). Moreover, there was a significant variation in the use of antenatal care service by residence (Abosse et al., 2010).

In the present study we shall deal with the utilization of antenatal care services in Sumbuk village in the state of Sikkim. The reports of National Family Heath Survey (NFHS)-3, has shown that lower utilization rates of Antenatal Care services in the state of Sikkim. Many parameters of prenatal period pertaining to women's health

such as not taking iron and folic acid and not visiting antenatal care during pregnancy is the vital cause for the poor maternal health outcome in Sikkim (Dehury et al., 2017).

"While Antenatal Care is considered essential for the health of both the mother and the child" (Chandhiok et al., 2006), no community-based studies to assess the contributory roles played by various factors its utilization has been undertaken in Sikkim. Besides, no Anthropological research has been done so far, particularly in Sikkim.

In view of the above mentioned facts, we proposed to undertake a study on the utilization of antenatal care services among women of the Sumbuk Village, South Sikkim with the following objectives.

Objectives

1. To determine the status of Utilization of Antenatal Care Services.
2. To estimate the level of awareness and knowledge on ANC services in the study village.
3. To analyze the socio-demographic factors associated with the utilization of ANC services.

CHAPTER II

REVIEW OF LITERATURE

From the perusal of accessible literature it is found that complications in pregnancy and childbirth are the leading cause of maternal mortality among women of reproductive age. According to many studies, not availing antenatal care services during pregnancy is the main reason for death of maternal mortality worldwide (Ponna et al., 2017; Awasthi et al., 2018; John et al., 2018). A number of studies have drawn the argumentation why ANC utilization is low in developing countries (Dyeli, 2012; Tshabalala, 2012; Sakala, 2011, Arop, 2015). Many studies on antenatal care in India and others parts of the country found that its lack is an important risk factor for maternal death. Ponna et al., in 2017 documented that Antenatal care of women during pregnancy influences postpartum health-seeking behavior in rural Tamil Nadu.

In India, reproductive and child health program was launched in 1997 to improve the antenatal care, institution deliveries with trained health worker and postnatal mother as well as the child health care services (Chandraker et al., 2009). “In previous research, it has been revealed that antenatal care utilization is influenced by a number of factors such as individual level which include socio-economic and reproductive characteristics of pregnant woman, household or interpersonal level like women’s autonomy, support from husband and family members, family income and health service level which include distance, accessibility and availability” (Tekelab et al.,2019).Evidence from previous research in different parts of the world indicates that the use of Antenatal care services by pregnant women is mainly influenced by the socio-economic status of her households (Boller et al., 2003).

The studies have revealed that sufficient knowledge of the benefits of ANC and of the complications associated with pregnancy plays an important role in the utilization of ANC services. Having a not supportive partner was reported to be major barrier for antenatal care services utilization. (Olayinka, 2012; Ali et al., 2018). According to Boller et al., (2003) and Ibnouf et al., (2007) women living in worse conditions are less access to private health services and more rely on Government health service than those women living in better condition. An example from Sudan shows that urban women seem to rely more on the doctors and health visitors as antenatal care providers while rural women approach the midwife and trained traditional birth attendant (TBA) for the same purpose (Ibnouf et al., 2007).

A comparative study of the utilization of antenatal care between Brazil and India reported that the antenatal coverage in India is low compared to Brazil. The percentage of women who receive antenatal care services in Brazil was 4 or more visits which are about 90 %. In India, only three -fourths of women receive any form of care and less than two-fifths have the recommended 4 or more visits (Andrade et al., 2012).

According to National Family Health Survey (NFHS3) 2005-2006, In India, although 76 percent of, only 44 percent started antenatal care during the first trimester of pregnancy, as recommend. Another 22 percent had their first visit during the fourth or fifth month of pregnancy. Just over half of mothers (52 %) had three or more antenatal visits (IIPS and ORC macro, 2007 and Andrade et al., 2012). Furthermore, the inequality in utilization of prenatal care and skilled birth attendance was mainly prominent in the rural areas than in their urban counterparts in India (Pathak et al., 2010; Andrade et al., 2012). Physical distance to health facilities, lack of

transportation and financial constraints are major barriers to accessing antenatal care in India (Andrade et al., 2012).

“A comparative Analysis of state fact sheets of National Family Health Survey (NFHS)-3 and between Goa and Sikkim found that Goa has better ANC care (Sikkim at 76.2% and Goa at 84.4%) than Sikkim according to NFHS-4 data. However Sikkim has improved it s performance from 57.9% to 76.2% from NFHS-3 to NFHS-4. Goa does not show increase of at least 4 ANCs in the data of NFHS-4 compared to NHFS-3, whereas Sikkim shows increased trend of at least 4 ANCs in the data of NFHS-4 compared to NHFS-3 (from 56.2% to 74.7%). The data infers that in Goa one-tenth of the pregnant women do not receive 4 ANC in comparison to one-quarter of the pregnant women according to NHFS-4 data. The protection of mothers against neonatal tetanus is promising for both the states according to NHFS-4 data (Goa at 96.2% and Sikkim at 97.2%). In Sikkim the consumption of iron and folic acid (IFA) is much lower; half of the women are protected against anemia in comparison 67.4% of women for Goa, as per the NFHS-4 data. However, Sikkim is able to increase the usage of IFA by almost 2 times compared to NFHS-3 data. Full antenatal care (ANC) consists of at least four antenatal visits, at least one tetanus toxoid (TT) and provision of IFA tablets or syrup for 100 or more days for care of the pregnant women. While Goa managed to increase full ANC by around 6% from NHFS-3 to NHFS-4, Sikkim shows a robust trend for this component during the same survey period, that is, from 22.4% to 39.0%” (Dehury et al., 2017).

The study has revealed that the disparity in the use of Antenatal care in India and Brazil is due to the contrast in terms of geographical, socio-cultural and the provision of health care facilities. In Brazil, the Government has taken the public healthcare reform during the last two decade to provide universal, integrated and free primary

and preventive health care services while healthcare coverage in India is not universal, the health care system is fragmented and pregnant women still relied on traditional and home-based antenatal care (Andrade et al., 2012). Approximately 87% population of Brazil lives in urban areas compared to 28 % in India which facilitates pregnant women of former more access to maternal health care services including antenatal care (Pallikadavath et al., 2004 and Andrade et al., 2012).

The various socio-demographic factors which act as barrier for the utilization of Antenatal care services are described as follows:

Maternal Age

It is established in the previous available literature that the age of an expectant mother at the time of her pregnancy determines the utilization of antenatal care. Many studies on maternal age in relation to utilization of antenatal care services reveal mixed evidence (Akowuah et al., 2018).For example, a study conducted by Akowuah et al., (2018) on determinants of antenatal Health care utilization by pregnant women in third semester in peri-urban Ghana reveals that the older the pregnant mothers is, the more likely she utilizes antenatal care services. Another study by Klemetti et al., (2014) revealed that the older mothers in Finland used more antenatal services than younger mothers.

"Previous Studies confirms that women who experience pregnancy below thirty five years of age preferred frequent antenatal visits to be assured that the baby was growing well but, older women may not experience any complications were not concerned about having ANC visits" (Gupta and Talukdar, 2017). "However, some of the earlier studies suggested that women's age was not being a significant predictor of

utilization of ANC services" (Bhattia et al., 1995; Celik et al.,2000; Overbosch et al., 2004;Obermeyer et al.,1991; Gupta and Talukdar, 2017).

Marital Status

Previous studies revealed that the marital status is one of the important factors that affect the utilization of antenatal care (Chaibva, 2007; Arop, 2015). For example, the studies done by Chaibva found that single pregnant women do not use ANC services frequently as compared to married women, mainly because they lack resources and social support from their families or partners (Chaibva, 2007, Arop, 2015). "In Ethiopia it was found that married women were 40% more likely to use ANC services than unmarried women during their pregnancy" (Mekonnen and Mekonnen , 2002; Arop, 2015). "Many others previous literature review also revealed that in developing countries married women use more ANC services than the single pregnant women" (Simkhada et al., 2008; Arop, 2015). "Study from Kenya suggested that the women who were not married and those who had started their childbearing earlier, below 20 years of age reported less utilization of ANC services than married women" (Arop, 2015).

Family Size

"Family size is another important predisposing factor believed to influence the utilization of antenatal care. Family size is measured as the number of persons in a particular household that are dependent on the pregnant mother for their daily sustenance" (Brakohiapa et al., 2001; Fawoleand and Adeoye, 2015; Akowuah et al., 2018). "It was found that pregnant women with large family size tend to underutilize Antenatal care services due to excessive demand of their money, time and the other resources" (Abor et al., 2011; Akowuah et al., 2018). The study from Ghana

suggested that household size would mean a lower average income generally in poor communities (Buor, 2003; Akowuah et al., 2018). “A number of studies support the view that ANC use is significantly influenced by the household size of mothers” (Ghana Statistical Service, 2003; Peters et al., 2008; Akowuah et al., 2018).

Maternal Education

“The level of education to women plays very important role in the mother’s use of ANC services. More educated girls and women are more likely to delay their marriage in order to have a healthier and manageable family” (UNFPA, 2013; Varma et al., 2011; Arop, 2015). “As a result, improving the mother’s education and creating more opportunities for women can have a greater contribution in improving utilization of ANC services” (Abor and Abekah, 2014; Arop, 2015).

Findings of some study predicts that education of mothers is one of the foremost predictors to adopt antenatal and post natal care (Gupta and Talukdar, 2017). In a recent review conducted in low and middle-income countries, Banke-Thomas OE stated that education of the mother and her partner were the most significant factors that influence the utilization of maternal health care services (Banke et al., 2017; Tekelab et al., 2019). The findings of a systematic review conducted by Simkhada et al., indicated that women’s and their partner’s level of education and exposure to mass media were associated with the utilization of antenatal care (Simkhada et al., 2008; Tekelab et al.,2019)

Mothers with the high educational level expected to accept the recommended number of ANC visits (Nielsen et al., 2001; Erci, 2003; Gupta and Talukdar, 2017). “Educated women tend to have a greater awareness of the existence of ANC services and the advantage of using such services” (Efendi et al., 2016; Ali et al., 2018). It is argued

that educated women were more aware of health problems, know more about the availability of health care services, and utilize the information more effectively than the non-educated women (Onasoga et al., 2012; Ali et al., 2018).The extensive contemporary literature on maternal health and child well- being suggests that the low educational level of pregnant women is associated with the reduced use of prenatal care services, late initiation of care, and inattention to such services (Tran et al., 2011; Hajizadeh et al., 2016; Gupta and Talukdar et al., 2017). "Several studies have shown that low maternal education is one of the barriers against receiving timely and frequent prenatal care" (Ayoola et al., 2010; Beeckman et al., 2010; Neupane et al., 2012 and Hajizadeh et al., 2016).In contrast, education did not show any significant association with utilization of ANC services in Pakistan (Nisar et al., 2003; Gupta and Talukdar et al., 2017).

Household Income

"Findings of some study conclude that financial constraints play a profound role in non-use of ANC services. The costs of the service including transportation and necessary laboratory tests were major factors prohibiting women from service utilization" (Overbosch et al., 1991; Adamu et al., 2002; Gupta and Talukdar et al., 2017). Many previous studies have shown the Most of the studies have significant association between socio-demographic factors and the antenatal care utilization (Ali et al., 2018). "A number of studies have shown that Women of higher socioeconomic status are more likely to receive early and adequate prenatal care, compared to those of a lower socioeconomic status" (Matsumura et al., 2001; Magadi et al., 2000; Nisar and White; 2003 Hajizadeh et al., 2016).

“Studies also found that health insurance coverage had a positive and significant impact on utilization of prenatal care. A study in rural North India reveals that women’s autonomy was positively related to use of antenatal care” (Pallikadavath et al., 2004; Gupta and Talukdar et al., 2017). “Other studies found that women from male -headed households were significantly less likely to use ANC in Nepal” (Matsumura et al., 2001; Gupta and Talukdar et al., 2017).

Occupation

“According to previous research it was found that the Occupation is one of the major barriers against optimal, timely, and frequent utilization of Antenatal care services” (Johnson et al., 2007; Beeckman et al., 2011; Hajizadeh et al., 2016). “Overall, timing and frequency of antenatal care visits are significantly associated with the occupational status of expectant women and their partners” (Bbaale, 2011; Hajizadeh et al., 2016). “Based on a previous study, women whose partners were unemployed or workers did not receive full prenatal care, unlike those whose partners were gainfully employed” (Cicekliogl u et al., 2005; Hajizadeh et al., 2016)). “Occupational status of women is among the most common factors affecting the utilization of prenatal care services. Employed women more frequently receive prenatal care, compared to housewives” (Simkhada et al., 2008; Beeckman et al., 2010; Kabir et al., Hajizadeh et al., 2016). “In fact, these women are more likely to receive timely prenatal care services” (Navaneetham et al., 2002; Magadi et al., 2000; Hajizadeh et al., 2016).

Age at Marriage

“Findings of some studies suggested that the in developing countries women who belongs to younger stage are more at risk of having complications during their pregnancy. Younger mothers are less likely to continue their education, and moreover,

they are less likely to be aware of the complications related to pregnancy. In Malawi and Zambia found that, women aged less than 25 had a lower rate of utilization of antenatal care compared to older women"(Arop, 2015). A study conducted by Sharma (2002) in Nepal found that those women who got married before 15 years of age are less access to utilization of antenatal care.

Parity

"Parity in this context is defined as a number of times a woman had given birth to a child, irrespective of being born alive of stillbirth. Previous pregnancies of a woman influence the degree of risk in her current pregnancy" (Arop, 2015). "Studies have suggested that parity influences initiation of ANC, as parity increases, the experience of timely initiation of ANC decreases" (Ali et al., 2018). Pregnant mother who gave childbirth for numerous times might tend to depend on their experience from previous pregnancies and may not feel the importance to go for ANC visits (Ali et al., 2018). "They conjectured that mothers with more children have more chores and responsibilities that take up their time and they seem to rely on their past experiences and do not perceive the need for ANC services (Arop, 2015). "Another study from Nepal revealed that the percentage of pregnant mother with one or two child birth likely to attend more antenatal care services in contrast to mother with more than three children, which shows that less parity mother are more likely to use ANC than those with high parity" (Sharma, 2002; Yalem, 2010; Arop, 2015).

CHAPTER III

MATERIALS AND METHODS

Land and People

Sikkim is the 22nd State of the Indian Union with the total geographical area of 7096 sq km. It is located in the southern mountain ranges of the Eastern Himalayas. Sikkim has divided into four districts namely East, West, North and South. Gangtok is the state capital of Sikkim. According to the 2011 census, the total population of Sikkim state stands at 610,577 which is the accumulation of 43,709 belonging to North district, 136,435 belonging to the West district, 146,850 belonging to the South district and 283,583 belonging to the East district.

Lepchas, Bhutias and Nepalese are the three different ethnic communities of Sikkim. They are characterized by their individual culture, customs and traditions. Nepali is the lingua franca and predator language of Sikkim.

"Lepchas are considered to be the original inhabitants of state Sikkim. They call themselves Rong-kup or 'Mutanchi Rongkup', meaning 'mother's loved ones. Dzongu in North Sikkim is regarded as a lepcha reserve where outsiders are not allowed settle" (Risley, 1894). The lives of the Lepchas center on mount Khangchendzonga. They believed that their ancestors were made from a ball of fresh snow from the summit of Khangchendzonga so they worship this mountain and consider as their mother creator. 'Rongring' with its script 'Mutanchi Rong Aming' is the language of lepcha. The dress pattern of lepcha is very simple; male members used to wear *thakro/ dumpra*, a multi-coloured, hand-woven cloth pinned at one shoulder and held in place by a waist band, usually worn over a white shirt *yonthatse* and *tomu.* While the lepcha women traditional cloth is the ankle -length

dumbun/dumdyan worn with a *tago* (a loose blouse), and supported by a belt known as *nyamrek*. They also wear *naykong* (earings), *lyak* (necklace), and *gyar/ akager* (bracelets) as ornaments (Doma, 2017). The lepcha priest are known as Bongthing. Namsoong or Nambun and Tendong Lho Rum Faat are the important festival celebrated by lepcha. Rice is the staple food of lepcha. The practice monogomay as the form of marriage.

History says, the Bhutias of Sikkim are of Tibetan origin, having same cultural pattern, language and scripts as the Tibetans. Tibet is called Bod in Tibetan dialect which means land of snow and the people are called *Bod-pa* (Rai, 2012). The Sikkimese Bhutia also known as Lhopo, which means 'the dwellers of the southward'. They speak and write in Bhutia language which is also called Lhokey. Every household ritual, marriages, birth and death ceremonies and agricultural rites are conducted by monks. Traditionally, Bhutias were agriculturalists and pastoralists. They are famous for weaving, wood-carvings and thangka paintings. Sonam Losoong and Pang Lhabsol is the main festival celebrated by the Bhutias. Rice is their staple food. They used to wear traditional dress known as *bakhu* with *honju*.

The Nepalese are largest ethnic group in Sikkim. Nepalese communities consist of different castes like Bahuns, Chettris, Limbus, Rai, Mangers, Pradhans etc. Agriculture is the main source of livelihood.

"Teesta and the Rangeet are the two important rivers of Sikkim. The climate of Sikkim is extremely varied largely due to variation in altitude. It has the Himalayan or high mountain type of climate. Altitude is the most important factor controlling the climate and weather condition in Sikkim. Sikkim mainly experience four type of season; the cold weather season (December to February), the spring weather season

(March to May), the south-west monsoon (June to September) and the period of retreating monsoon (October to November). In Sikkim, the mean annual rainfall varies from 2000 mm. to 4000 mm. with intensity of rain from drizzling showers in lower altitude to torrential rains in higher altitude. South-East region and South-West region are two maximum rainfall areas as compared to North-West region. The state received high rainfall during month of May to September. Sikkim is rich in its forest resources. Lying completely within the Himalayan belt, it has large areas under forests ranging from the Tropical to Temperate and Alpine zone. Sikkim is endowed with a variety of natural flora and fauna. The state houses over 400 species of flowering plants, 300 species of ferns and its allies, 11 species of oaks, 8 species of tree ferns, 40 species of primulas and 20 species of bamboos. The faunal wealth of Sikkim comprises of 144 species of mammals, 600 species of birds, 400 species of butterflies and moths and many species of reptiles. Sikkim is a hilly State in the Eastern Himalayas where agricultural practices and adaptations are highly variable in time and space due to varying altitudes and agro-climatic situations. Agriculture is the primary activity of the people of Sikkim. Agriculture along with livestock is the single largest employer in the state" (census, 2011).

Study Area and Sample Population

The present study was conducted in Sumbuk village of South Sikkim. The village is located 17 kms. South of the District headquarters, Namchi. The present study deals with the utilization of antenatal care in Sumbuk village. Field work for data collection was carried out during the period between June and August 2019.

The present study was a community based micro-level study in nature. Necessary data were collected from women of Sumbuk village through interview by adopting semi-

structured schedule. Sample size for the present study consists of 250 ever-married women who were in their reproductive age (i.e. 15-49 years), as per the World Health Organization (WHO, 2006). An attempt was made to include in sample all the ever-married women in the village who were willing to participate. Ethical clearance was obtained from the Institutional Committee, Sikkim University, before the commencement of the study. Verbal consent was also obtained from informants before the interview.

In this study, an attempt was made to understand the various socio-demographic factors associated with the utilization of antenatal care services by using the Anderson and Newman behavioural model of health care utilization (Anderson and Newman; 2005; Tesfaye et al., 2019). This model typically classified the factors that influence utilization of health care into three categories. The *predisposing* factors are the demographic and social conditions that influence the person's decision to use the service. The *enabling* factors are economic circumstances that facilitate service utilization. The *need* factor reflects the perceived health service needs and are related to the actual illness condition. In the present study only predisposing and enabling factor were used. Predisposing factor includes age of the mother, marital status, age at first marriage, maternal education and parity; and enabling factor include household income, informant's occupation and husband's occupation.

The following data were collected through interview by adopting semi- structured schedule.

1. Data on the types of antenatal health check-ups and the frequency of such visits, timing of antenatal care visits, and place of ANC visits was collected to determine the status of utilization of antenatal care services in the study village.

2. Data was collected from informants to estimate their level of awareness and knowledge on antenatal care services during pregnancy. Information on women's knowledge and awareness about ANC was obtained by asking questions to the informants such as the types of treatments they received during ANC visits. Those women, who received tetanus toxoid injection, and iron and folic acid; and whose weight, height, fetal examination/ ultrasound, urine test and blood test were taken or examined were categorized as aware or having knowledge on antenatal care services. On the other hand, those informants who only received tetanus toxoid vaccination and consumed iron and folic acid during pregnancy were categorized as non-aware and do not have adequate knowledge on ANC services.

3. Information regarding socio-demographic factors such as age, age at marriage, education and occupation of the women, along with the family income, family size and parity were collected.

    (i) *Age:* Age for the present study was classified into three groups with equal class intervals. They are15-24 years, 25-34 years and 35-49 years.

    (ii) *Age at marriage*: Data on age at marriage was divided into two categories such as<18 years and, 18+ years.

(iii) *Parity*: Data regarding parity was classified into three groups i.e., 1 child birth, 2child births and 3+child births.

(iv) *Education*: Educational attainment of the individuals were categorized as: no formal education (those who are illiterate), primary education (those who attained class I to V level), secondary education (those who completed class X) and tertiary education (those who studied above class X).

(v) *Occupation*: Occupation for the present study was categorized into three groups. They are housewives, government employees and others. Others category includes daily wage earners, cultivators or engaged in agricultural activities and those who run private business. They were included in the same group of occupation as they were found to have similar income while collecting data.

(vi) *Family household income*: Data on family household income was classified into three groups: low income group (below 50^{th} percentile Rs <4,250), middle income group (between 50^{th}-75^{th} percentile Rs 4,250-9,000) and high income group (above 75^{th}percentile > Rs 9,000). Data on household income were cross checked taking into considerations some aspects of socio-economic conditions like types of occupation and household ownership of physical assets, such as television, computer, phone, watch, automobile, refrigerator, etc.

(vii) *Family size*: Data on the family size was divided into three categories such as small size family (<4 members in the family), medium size family (5-6 members in the family) and large size family (7+ members in the family).

Statistical Analysis

All the necessary statistical analysis has been applied for presentation of the data mentioned above, keeping in view the objectives of the present study. The data were presented in terms of means, standard deviations (SD) and percentages. Pearson's chi-square (χ^2) test for independence was also performed to examine the relationship between utilization of antenatal care services and the various socio-demographic factors. All data were entered and analyzed adopting statistical software known as Statistical Package for Social Sciences (SPSS).

CHAPTER IV

RESULTS

This chapter shall deal with the analysis and description of data on the various socio-demographic factors influencing the utilizations of antenatal care among women in Sumbuk village, South Sikkim.

Table- 1: Frequency distribution of women according to age groups.

Age groups (in years)	**Frequency n = 250**	Mean ±SD
15-24	36 (14.4%)	35.26±8.456
25-34	86 (34.4%)	
35-49	128 (51.2%)	
Total	250 (100%)	

Table 1 shows the frequency distribution of women according to the age groups. It shows that there are altogether 250 women out of which majority (51.2%) of them belong to 35-49 years followed by 25-34 years (34.4 %) and 15-24 years (14.4%).The mean age of women in all age groups is recorded as 35.26±8.456 years.

Table-2: Frequency distribution of women by marital status

Marital status	**Frequency** **n=250**
Living with spouse	239 (95.6%)
Widow/Separated	11 (4.4%)
Total	250 (100%)

The frequency distribution of women according to their marital status is given in Table 2. It is observed that out of a total of 250 women, there are as much as 95.6% women who were living with their spouse while only 4.4% were widow or separated with their husbands.

Table -3: Frequency distribution of women according to family size

Family size	**Frequency** **n=250**
Small	185 (74.0%)
Medium	54 (21.6%)
Large	11 (4.4%)
Total	250 (100%)

It is evident from Table 3 that the frequency of women decreases with the increasing number of family members. As such, there are 185 (74.0%) women in small size

family while there are 54 (21.6%) in medium size family and only 11 (4.4 %) in large size family.

Table- 4: Frequency distribution of women by their educational level

Educational level	**Frequency** **n=250**
No formal education	51 (20.4%)
Primary education	56 (22.4%)
Secondary education	121 (48.4%)
Tertiary education	22 (8.8%)
Total	250 (100%)

Table 4 shows the distribution of women according to their educational level. It is found that secondary education has the highest percentage of women (48.4%) followed by primary education (22.4%), no formal education (20.4%) and tertiary education (8.8%).

Table-5: Frequency distribution of women according to household income groups

Income group	**Frequency** **n = 250**
High income group	10 (4.0%)
Middle income group	44 (17.6%)
Low income group	196 (78.4%)
Total	250 (100%)

It is evident from Table 5 that majority of the women belong to the lowest income group. The percentage of women in low income group is as high as 78.4% whereas the same is as low as 4.0% in high income group. It is also seen that there are 17.6% women in middle income group.

Table -6: Frequency distribution of women by occupation

Occupation	**Frequency** **n=250**
Housewives	202 (80.8%)
Govt. employees	19 (7.6%)
Others*	29 (11.6%)
Total	250 (100%)

*Others include daily wage earners, cultivators, and private business

Table 6 shows the frequency distribution of women based on their occupation. It is observed that out of the total 250 women, 202 (80.8%) were housewives. There are 29

(11.6%) women who were in ‘others’ category and only 19 (7.6%) women who were Government employee.

Table-7: Frequency distribution of women the by age at marriage

Characteristics **(Age at Marriage in Years)**	**Frequency** **n=250**
<18 years	112 (44.8%)
18+ years	138 (55.2%)
Total	250 (100%)
Mean Age at Marriage ± SD	22.44±3.78

The frequency distribution of women by age at marriage is shown in Table 7. It shows that the frequency of women who married after attaining 18 years of age is slightly higher than those who married before attaining 18 years of age. Thus, the percentage of women according to their age at marriage is distributed as 55.2% and 44.8% respectively. The table further shows that the mean age at marriage of women in Sumbuk village is 22.44±3.78.

Table-8: Frequency distribution of women according to parity

Parity	**Frequency** **n=250**
1 child birth	85 (34.0%)
2 child births	97 (38.8%)
3+ child births	68 (27.2%)
Total	250 (100%)

Table 8 shows the frequency distribution of women according to parity. It is found that 85 (34 %) women had given birth to a single child, while 97 (38.8%) women had two child births and 68 (27.2 %) women had three or more number of child births.

Table -9: Frequency distribution of women according to antenatal care visits

ANC visit	**Frequency** **n=250**
Yes	188 (75.2 %)
No	62 (24.8 %)
Total	250 (100%)

Table 9 shows the frequency distribution of women according antenatal care visits. It is seen that most of the women (75.2 %) had antenatal care visits during pregnancy. There are 24.8 % women who had no antenatal check-up.

Table 10: Frequency distribution of women by number of antenatal care visits

No. of ANC visits	**Frequency** **n=250**
0	62 (24.8%)
1-2	24 (9.6 %)
3-4	125 (50.0%)
<5	39 (15.6%)
Total	250 (100%)

The frequency distribution of women by number of antenatal care visits is given in Table 10. It reveals that the highest frequency of women (50.0%) had 3-4 times of antenatal care visits. As shown in the previous followed by was found that out of 250 informants, 125 (50 %) informants had visit ANC as recommended by World Health Organization, followed by 39 (15.6 %) informants had visited ANC more than 5 times; 24 (9.6 %) informants had visited ANC 1- 2 times and remaining 62 (24.8%) informants had not visited ANC.

Table -11: Frequency distribution of women by place of antenatal care visits during pregnancy

Place of ANC Visits	**Frequency** **n=250**
Government	153(61.2%)
Private	9 (3.6%)
Both	26 (10.4%)
Never	62 (24.8%)
Total	**250 (100%)**

Table 11 shows the frequency distribution of place of Antenatal Care Visits during pregnancy by women. It was found that the most common choices for ANC check-up in Public sector 153 (61.2%), followed by women who received ANC from the both Private and public sector 26 (10.4%). Few women received ANC from Private sector 9 (3.6%) and the 62 (24.8%) women have not done their antenatal check-up either from public and private sector.

Table12: Frequency distribution of women according to awareness of ANC

Aware	**Frequency** **n=250**
Yes	198 (79.2%)
No	52(20.8%)
Total	250 (100%)

Table12 shows the frequency distribution of women according to awareness of ANC. It is observed that there are 198 or 79.2 % women who were reported to be aware of ANC while the remaining 52 or 20.8% women reported that they were not aware of ANC.

Table13: Frequency distribution of women by sources of awareness on ANC

Sources of awareness	**Frequency** **n=250**
HW/AW/ICDS	93(37.2%)
Family	74(29.6%)
Relatives	31(12.4%)
Not aware	52(20.8%)
Total	**250 (100%)**

Table 13 shows the frequency distribution of women by sources of ANC awareness. It shows that the highest frequency of women (37.2%) got information about ANC from

health workers (HW), Anganwadi workers (AW) and ICDS. There are 29.6% women who were aware about ANC through family members while 12.4% were aware through relatives. On the other hand, there are 20.8% women who reported that they were not aware of ANC.

Table 14: ANC visits according to age of women

Age groups (in years)	**Frequency n=250 (100 %)**	**ANC visits**	
		Yes n =185 (75.2 %)	**No n=62 (24.8 %)**
15-24	36(14.4 %)	36(100 %)	0(0 %)
25-34	86(34.4 %)	82(95.4 %)	4(4.6%)
35-49	128(51.2 %)	70(54.7%)	58(45.3%)

- $\chi 2 = 59.472$; df =2; $p<0.05$

Figure 1: Bar chart showing ANC visits according to age of women

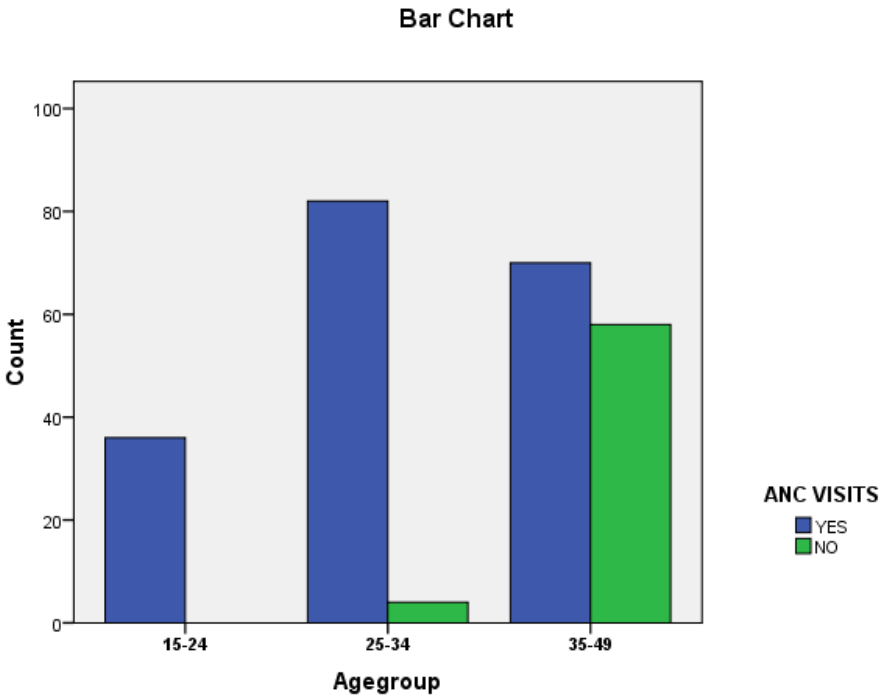


Table 14 shows the distribution of women in relation to age group and ANC visits. It is seen that the likelihood to have ANC visits decreases with the increasing age of women. All women in the age group 15-24 years had ANC visits. Of the 86 women in the age group 25-34 years, 82 (95.4%) had ANC visits. Further, 70 (54.7%) women in the age group 35-49 years visited ANC, out of the total 128 women. The $\chi 2$ test between antenatal care visits and age group is statistically significant ($\chi 2 = 59.472$; df = 2; $p<0.05$).

Table15: ANC visits according to marital status of women

Marital Status	**Frequency** **n=250 (100 %)**	**ANC visits**	
		Yes **n =188** **(75.2%)**	**No** **n=62 (24.8 %)**
Living Spouses	239 (95.6 %)	185 (77.4%)	57 (22.6%)
Widow/Separate	11(4.4 %)	3(27.3 %)	8 (72.7 %)

- $\chi 2 = 14.172$; df=1; $p<0.05$

Figure 2: Bar chart showing ANC visits according to marital status of women

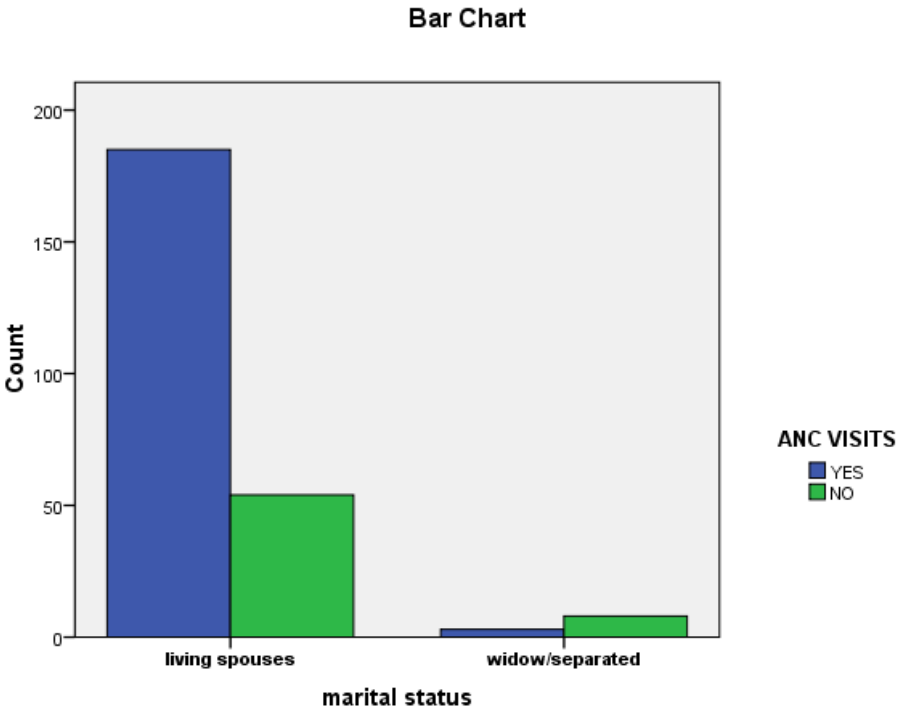


Table 15 shows the distribution of ANC visits in relation to marital status. It is found that there are 239 women living with their spouses, out of which 185 (77.4%) had

ANC visits while the remaining 54 (22.6%) had no ANC visits. Among the 11 women who were widow or separated from their husbands, only 3 (27.3%) of them had ANC visits while 8 (72.7%) of them had no ANC visits. $\chi 2$ test also reveals that marital status has a significant influence on ANC visits of women in this study ($\chi 2$ =14.172; df=1; $p<0.05$).

Table 16: ANC visits according to family size of women

Family size	**Frequency n=250(100%)**	**ANC visits**	
		Yes n=188 (75.2%)	**No n=62 (24.8%)**
Small	185 (74.0 %)	157 (84.9 %)	28 (15.1 %)
Medium	54 (21.6 %)	29 (53.7 %)	25 (46.3 %)
Large	11 (4.4 %)	2 (18.2 %)	9 (81.8 %)

- $\chi 2$ =41.822; df=2; $p<0.05$

Figure 3: Bar chart showing ANC visits according family size of women

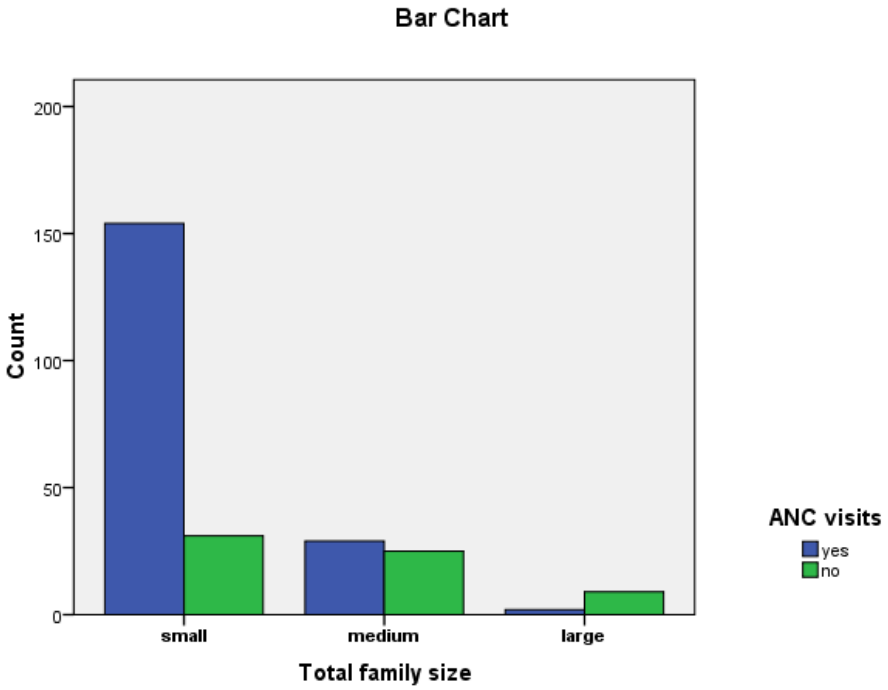


Table 16 shows the frequency distribution of ANC visits in relation to family size of women. It is found that majority of women (74.0%) belong to small size family while 21.6% belong to medium size family and only 4.4% belong to large size family. The likelihood to visit ANC tends to decrease with the increasing family size. Of the 185 women in small size family, 84.9% visited ANC whereas 28 (15.1%). Out of 54 women in medium size family, 29 (53.7 %) visited ANC and only 2 (18.2%) out of 11 women in large size family visited ANC. The difference between family sizes with respect to ANC visits is also statistically significant ($\chi 2 = 41.822$; df=2; $p<0.05$).

Table 17: ANC visits according to educational level of women

Educational level	Frequency n=250 (100%)	ANC visits	
		Yes n=188 (75.2 %)	No n=62 (24.2 %)
No formal education	51 (20.4 %)	22(43.1 %)	29(56.9 %)
Primary education	56 (22.4 %)	38 (67.9 %)	18(32.1 %)
Secondary education	121 (48.4 %)	107 (88.4%)	14(11.6 %)
Tertiary education	22 (8.8 %)	21 (95.5 %)	1(4.5 %)

- $\chi 2 = 45.927$; df =3; $p<0.05$

Figure 4: Bar chart showing ANC visits by educational level of women

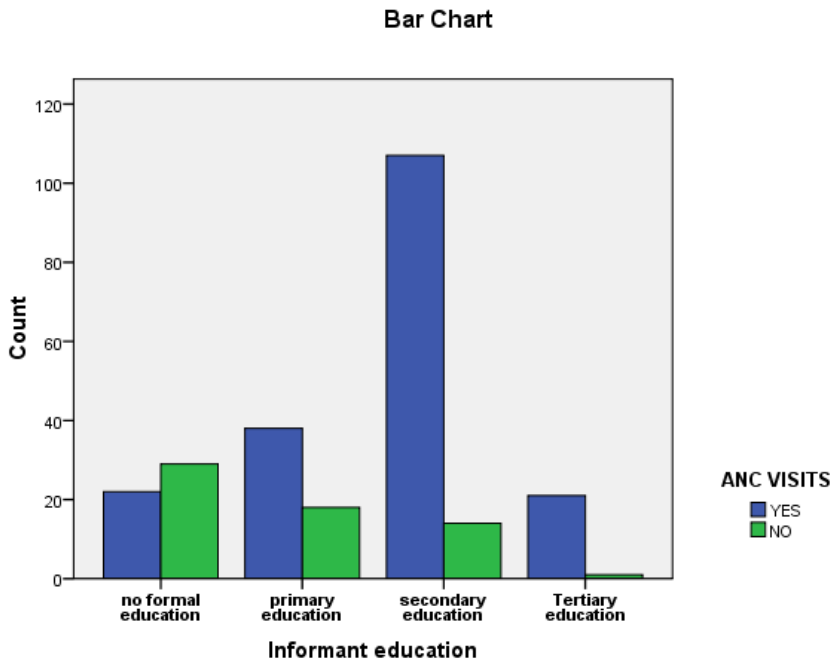


Table 17 shows the distribution of women's ANC visits in relation to educational level. It shows that women's education seem to play an important role in ANC visits.

The rate of ANC visits increases as we move up the educational level of women. There are 51 women having no formal education, out of which 43.1 % visited ANC. A total of 56 women attained the primary level of education among which 67.9 % had ANC visits. Of the 121 women in secondary education, 88.4% of them had ANC visits. Further, there are 22 women who completed tertiary education, out of which 95.5% had ANC visits. The table also observed that there is a significant difference between women's educational level on their ANC visits ($\chi 2 = 45.927$; df =3; $p<0.05$).

Table18: ANC visits according to income groups

Income groups	**Frequency n=250 (100%)**	**ANC visits**	
		Yes n=188 (75.2 %)	**No n=62 (24.2%)**
High income group (>Rs. 9000)	10 (4.0 %)	10 (100 %)	0 (0 %)
Middle income group (Rs. 4250-9000)	44 (17.6 %)	38 (86.4 %)	6 (13.6 %)
Low income group (< Rs. 4250)	196 (78.4 %)	140 (71.4 %)	56 (28.6 %)

- $\chi 2 = 7.733$, df=2; $p<0.05$

Figure 5: Bar chart showing ANC visits according to income groups

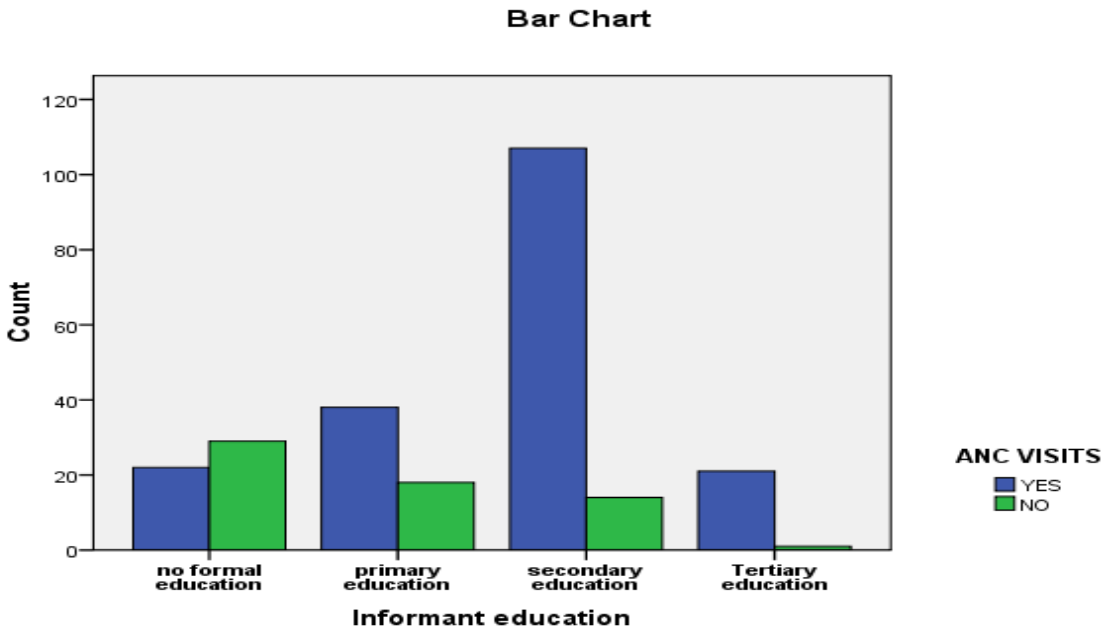


Table 18 shows the frequency distribution of women according to ANC visits and income groups. It is found that the likelihood to visit ANC increases with the increasing household income. Thus, all women in high income group had ANC visits, while 38 (86.4%) out of 44 women in middle income group and 140 (71.4 %) out of 196 women in high income group had ANC visits during pregnancy. The $\chi 2$ test also reveals that women's ANC visits between different income groups is statistically significant ($\chi 2 = 7.733$, df=2; $p<0.05$).

Table 19: ANC visits according to occupation of women

Occupation	**Frequency n=250 (100%)**	**ANC visits**	
		Yes n=188 (75.2 %)	**No n=62 (24.8 %)**
Housewives	202 (80.8 %)	153 (75.7 %)	49 (24.3 %)
Govt. employees	19 (7.6 %)	16 (84.2 %)	3 (15.8%)
Others*	29 (11.6 %)	19 (65.5 %)	10 (34.5%)

- $\chi 2 = 1.386$; df=2; $p>0.05$

*Others include daily wage earners, cultivators, and private business

Figure 6: Bar chart showing ANC visits according to occupation of women

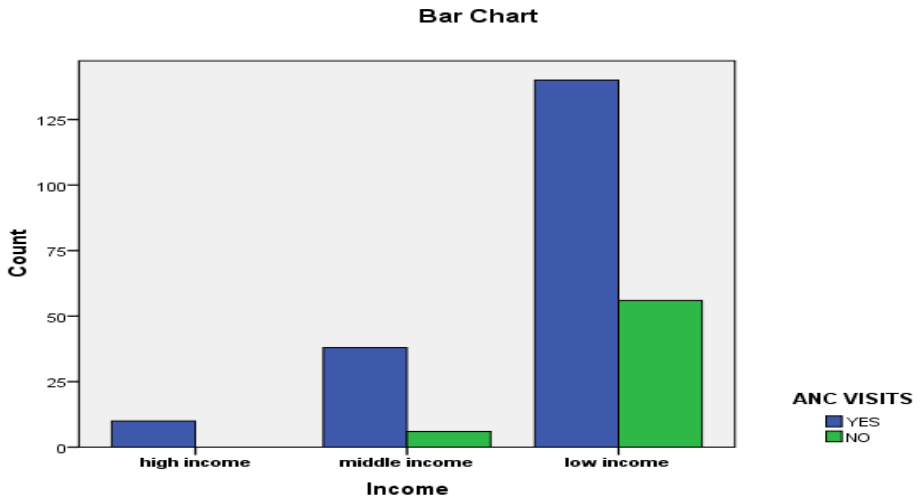


Table 19 shows the frequency distribution of ANC visits according to women's occupation. It is observed that 202 (80.8%) women out of the total 250 are housewives whereas 19 (7.6%) are government employees and 29 (11.6%) are in others category. Of the total 19 employees, 16(84.2%) visited ANC. There are 202 housewives, out of which 153 (75.7%) had ANC visits; and there are 29 women in

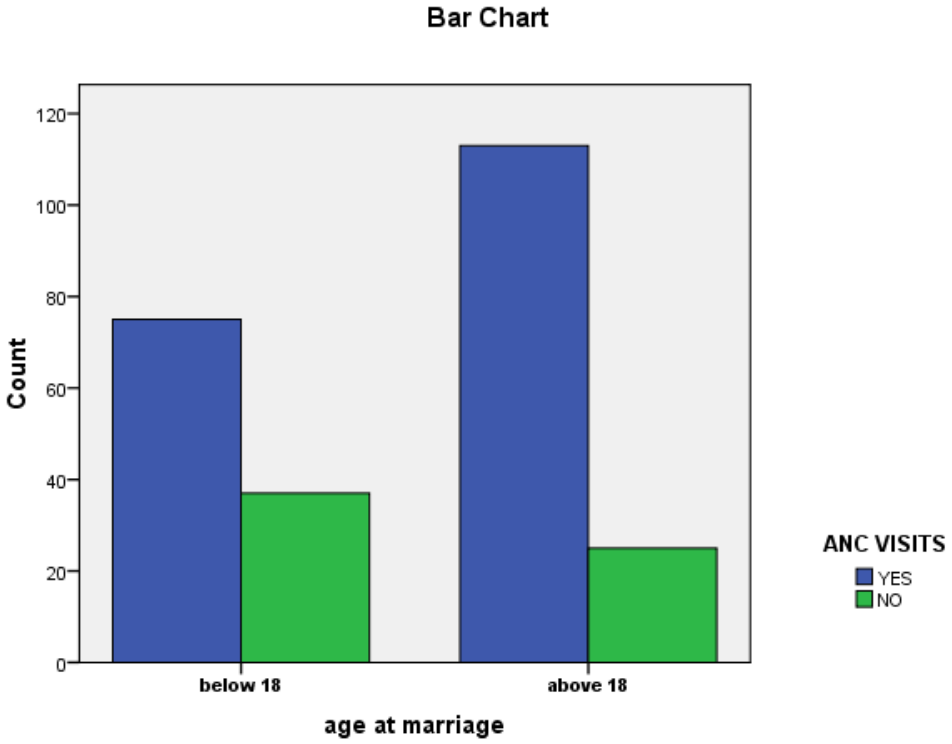
other category, out of which 19 (65.5%) had ANC visits. The chances of ANC visits is highest among government employees followed by housewives and others category. However, the difference between women's occupation in relation to ANC visits is not statistically significant ($\chi 2 = 1.386$; df=2; $p>0.05$).

Table 20: ANC visits according to age at marriage of women

Age at marriage (in years)	**Frequency n=250 (100%)**	**ANC visits**	
		Yes n=188 (75.2 %)	**No n=62 (24.8 %)**
Below 18	112 (44.8 %)	75 (67.0 %)	37 (33.0 %)
18 and above	138 (55.2 %)	113 (81.9 %)	25 (18.1 %)

- $\chi 2 = 5.220$; df=1; $p<0.05$

Figure 7: Bar chart showing ANC visits according to age at marriage of women.



The frequency distribution of ANC visits according to women's age at marriage is given in Table 20. It is seen that women who married after attaining 18 years of age have slightly better chance of having ANC visits. There are 112 women who married before attaining 18 years of age, out of which 75 (67 %) had ANC visits whereas there are 138 women who married after attaining 18 years of age, among 113 (81.9%) had ANC visits. The $\chi 2$ test shows that there is a significant differences between age at marriage on ANC visits ($\chi 2 = 5.220$; df=1; $p<0.05$).

Table 21: ANC visits according to parity

Parity	**Frequency n=250 (100%)**	**ANC visits**	
		Yes n=188 (75.2 %)	**No n=62 (24.8%)**
1 child birth	85(34.0 %)	78 (91.8 %)	9 (10.6 %)
2 child births	97(38.8 %)	78 (80.4 %)	19 (19.6 %)
3+ child births	68 (27.2 %)	32 (47.1 %)	36 (52.9 %)

- $\chi 2 = 42.794$; df=2; $p<0.05$

Figure 8: Bar chart showing ANC visits according to parity

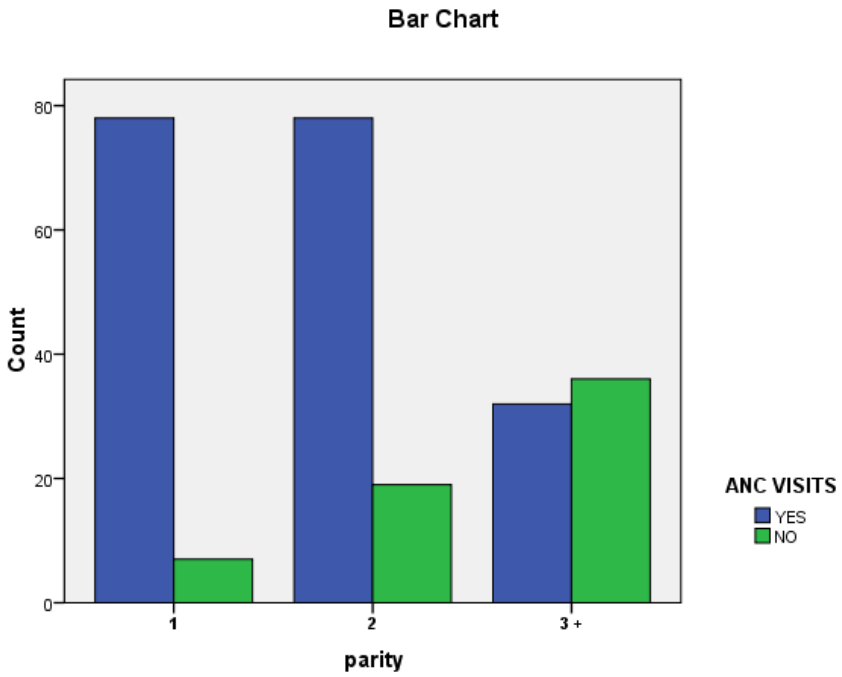


Table 21 reveals that women having only 1 child birth are more likely to visit ANC as compared to those having 2 child births and 3+ child births. Out of the total 85

women having a single child birth, 78 (91.8 %) had ANC visits. Among the 97 women having 2 child births, 78 (80.4%) visited ANC. It is also seen that there are 68 women having 3+ child births, out of which 32 (47.1%) had ANC visits. Further, the difference between number of child births on ANC visits is statistically significant ($\chi 2$ =42.794; df=2; $p<0.05$).

Table 22: Number of ANC visits according to age group of women

Age group (in years)	**Frequency n=250 (100 %)**	**No. of ANC visits**			
		0 n=62 (24.8 %)	**1-2 n=24 (9.6 %)**	**3-4 n=125 (50.0 %)**	**>5 n=39 (15.6 %)**
15-24	36 (14.4 %)	0 (0 %)	3 (8.4 %)	28 (77.8 %)	5 (13.8 %)
25-34	86 (34.4 %)	5 (5.8 %)	5 (5.8 %)	51 (59.3 %)	25 (29.1 %)
35-49	128 (51.2 %)	57 (44.5 %)	16 (12.5 %)	46 (35.9 %)	9 (7.1 %)

- $\chi 2=72.188$, df=6; $p<0.05$

Figure 9: Bar chart showing the number of ANC visits according to age group of women

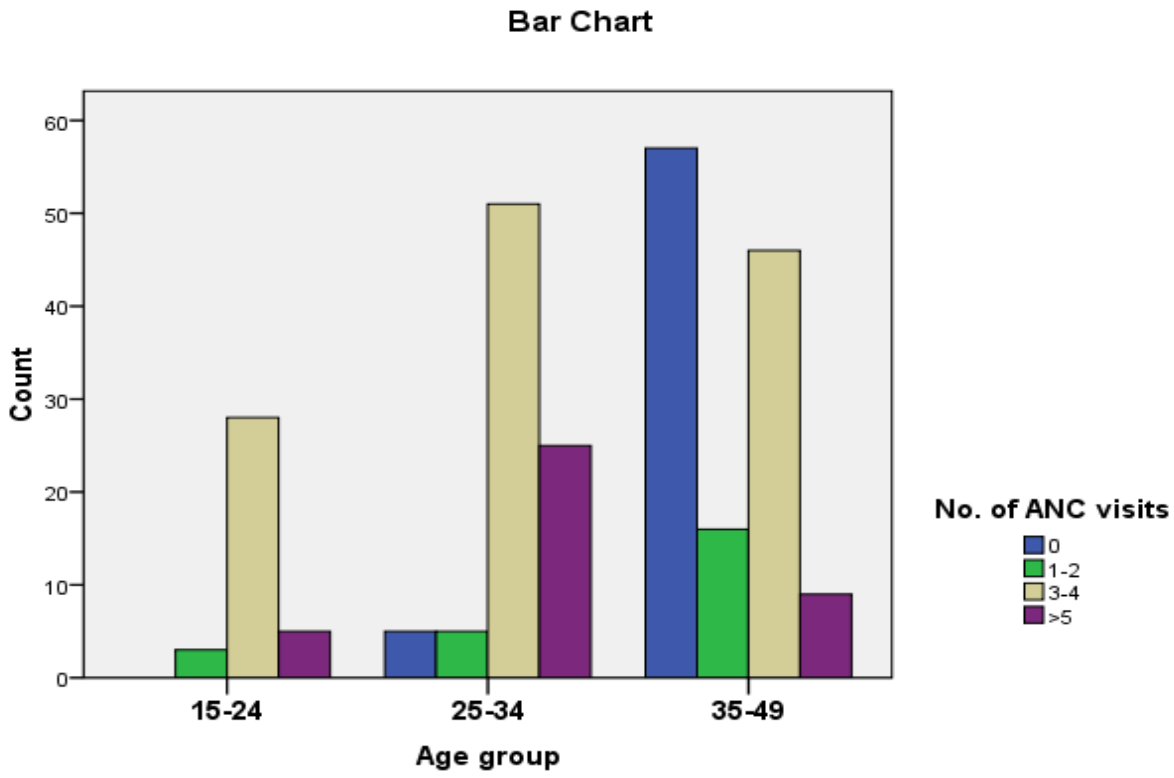


Table 22 shows the number of ANC visits according to age group of women. Out of the 36 women in the age group 15-24 years, majority (77.8%) visited ANC for 3-4 times. In the same age group, 13.8% had >5 times of ANC visits whereas 8.4% had 1-2 times of ANC visits. Likewise, women who visited ANC for 3-4 times recorded the highest percentage (59.3%) among 86 women in the age group 25-34 years. There are 29.1% and 5.8% women who had ANC visits for >5 times and 1-2 times in the age group 25-34 years. The percentage of women having no ANC visits is highest with respect to the age group 35-49 years. Of the 128 women in this age group, 44.5% had no ANC visits while 12.5%, 35.9% and 7.1% women visited ANC for 1-2 times, 3-4

times and >5 times respectively. The difference between age groups in relation to the number of ANC visits is also found to be statistically ($\chi2=72.188$, df=6; $p<0.05$).

Table 23: Number of ANC visits according to marital status of women

Marital status	**Frequency n=250 (%)**	**No. of ANC visits**			
		0 n=62(24.8 %)	**1-2 n=24(9.6%)**	**3-4 n=125(50.0%)**	**>5 n=39(15.6%)**
Living spouses	239(95.6%)	54 (22.6 %)	24 (10.1 %)	122 (51.0 %)	39 (16.3 %)
Widow/separated	11(4.4 %)	8 (72.7 %)	0 (0.0 %)	3 (27.3 %)	0 (0.0 %)

- $\chi2=14.746$; df=3; $p<0.05$

Figure 10: Bar chart showing the number of ANC visits according marital status of women

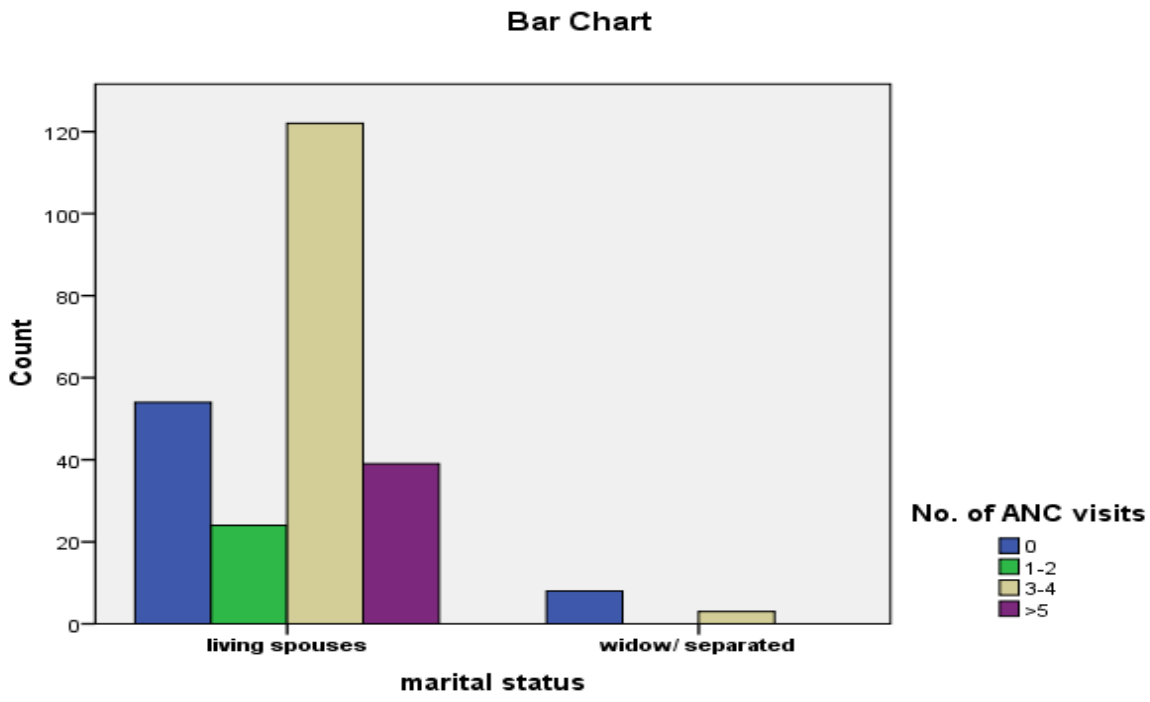


Table 23 the frequency distribution of the number of antenatal care visits in relation to

marital status of women. Of all the 239 women living with their spouses, majority (51.0%) visited ANC, while 16.3% visited ANC for >5 times and 10.1% visited ANC for 1-2 times. There are also 22.6% women having no ANC visits in this category. The frequency of ANC visits among widow or separated women is quite high. There are 11 women in this category, out of which 72.7% had no ANC visits while 27.3% visited for 3-4 times. The $\chi 2$ test shows that number of ANC visits between marital status is statistically significant ($\chi 2=14.746$; df=3; $p<0.05$).

Table 24: Number of ANC visits according to family size

Family size	**Frequency n=250 (100%)**	**No. of ANC visits**			
		0 n=62 (24.8 %)	**1-2 n=24 (9.6%)**	**3-4 n=125 (50.0%)**	**>5 n=39 (15.6%)**
Small	185 (74.0%)	29 (15.7%)	17 (9.2%)	104 (56.2%)	35 (18.9%)
Medium	54 (21.6%)	24 (44.5%)	7 (12.9%)	19 (35.2%)	4 (7.4%)
Large	11 (4.4%)	9 (81.8%)	0(0%)	2 (18.2%)	0 (0%)

- $\chi 2=42.131$; df=6; $p<0.05$

Table 24 shows the frequency distribution of the number of antenatal visits of women according to family size. It is seen that the percentage of women having no ANC visits is increasing along with the increasing family size. In small size family, there are 185 women out of which 29 (15.7%) had no ANC visits whereas 17 (9.2%), 104

(56.2%) and 35 (18.9%) had visited ANC for 1-2 times, 3-4 times and >5 times respectively. Among the 54 women in medium size family, 24 (44.5%) had no ANC visits although 7 (12.9%), 19 (35.2%) and 4 (7.4%) had ANC visits for 1-2 times, 3-4 times and >5 times respectively. There are as much as 81.8% women out of the total 11 women in large size family who had no ANC visits and only 18.2% having 3-4 times of visits. The difference in the number of ANC visits between family sizes is statistically significant ($\chi 2=42.131$; df=6; $p<0.05$).

Table 25: Number of ANC visits according to educational level of women

Educational Level	**Frequency n=250 (100%)**	**No. of ANC visits**			
		0 n=62 (24.8%)	**1-2 n=24 (9.6%)**	**3-4 n=125 (50.0%)**	**>5 n=39 (15.6%)**
No formal education	51 (20.4%)	29 (56.8%)	6 (11.7%)	16 (31.5%)	0 (0.0%)
Primary education	56 (22.4%)	18 (32.2%)	6 (10.7%)	24 (42.8%)	8 (14.3%)
Secondary education	121(48.4%)	15 (12.4%)	12 (9.9%)	74 (61.2%)	20 (16.5%)
Tertiary education	22 (8.8%)	0 (0%)	0 (0%)	11 (50%)	11 (50%)

- $\chi 2=69.663$; df=9; $p<0.05$

Figure 11: Bar chart showing number of ANC visits according to educational level of women

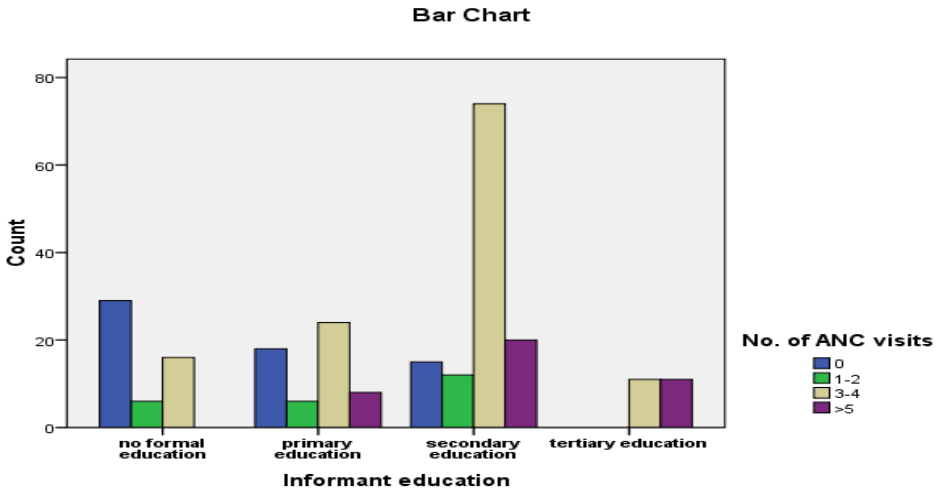


Table 25 depicts the frequency distribution of ANC visits of women by educational level. No formal education recorded the highest frequency of no ANC visits among all categories. There are 51 women with no formal education out of which 29 (56.8%) had no ANC visits while 6 (11.7%) visited 1-2 times and 16 (31.5%) visited for 3-4 times. Primary education consists of 56 women out of which 6 (10.7%), 24 (42.8%) and 8 (14.3%) attended ANC for 1-2 times, 3-4 times and >5 times respectively. The distribution among women in secondary education is 12 (9.9%), 74 (61.2%) and 20 (16.5%) respectively. Of the total 22 women in tertiary level of education, all of them visited ANC with 11 (50.0%) each for 3-4 times and >5times. The table further shows that there is a significant difference between educational level of women with respect to the number ANC visits ($\chi 2=69.663$; df=9; $p<0.05$).

Table 26: Number of ANC visits according to income groups

Income groups	**Frequency n=250 (100%)**	**No. of ANC visits**			
		0 n=62 (24.8%)	**1-2 n=24 (9.6%)**	**3-4 n=125 (50.0%)**	**>5 n=39 (15.6%)**
High income group (>Rs. 9000)	10 (4.0%)	0 (0%)	0 (0%)	1 (10%)	9 (90%)
Middle income group (Rs. 4250-9000)	44 (17.6%)	6 (13.6%)	2 (4.5%)	24 (54.5%)	12 (27.4%)
Low income group (< Rs. 4250)	196 (78.4%)	56 (28.6%)	22 (11.2%)	100 (51%)	18 (9.2%)

- $\chi 2=56.406$; df =6 $p<0.05$

The frequency distribution of number of ANC visits of women in relation to income group is shown in Table 26. It is observed that women in higher income groups tend to have higher percentage of ANC visits. Of all of the 10 women in high income group, 1 (10%) had 3-4 times of ANC visits and 9 (90.0%) had >5 visits. In middle income group, there are 44 women out of which only 6 (13.6%) had no ANC visits while 2 (4.5%), 24 (54.5%) and 12 (27.4%) had 1-2 times, 3-4 times and >5 times of ANC visits. There are 196 women in low income group out of which 100 (51%) attended ANC for 3-4 times. There are also 56 (28.6%) women in this income group

who had no ANC visits while 22 (11.2%) visited for 1-2 times and 18 (9.2%) visited for >5 times. It is also observed that there is a significant difference on the number of ANC visits between different income groups ($\chi 2$=56.406; df =6 p<0.05).

Table 27: Number of ANC visits according to Occupation.

Occupation	**Frequency n=250 (100 %)**	**No. of ANC visits**			
		0 n=62 (24.8%)	**1-2 n=24 (9.6%)**	**3-4 n=125 (50.0%)**	**>5 n=39 (15.6 %)**
Housewives	202 (80.8%)	49 (24.3%)	19 (9.4%)	107 (52.9%)	27 (13.4%)
Govt. employees	19 (7.6%)	3 (15.8%)	1 (5.3%)	7 (36.8%)	8 (42.1%)
Others	29 (11.6%)	10 (34.5%)	4 (13.8%)	11 (37.9%)	4 (13.8%)

Table 27: Number of ANC visits according to occupation of women

- $\chi 2$=13.776; df=6; p>0.05

*Others include daily wage earners, cultivators, and private business

Figure 12: Bar chart showing the number of ANC visits according to occupation women

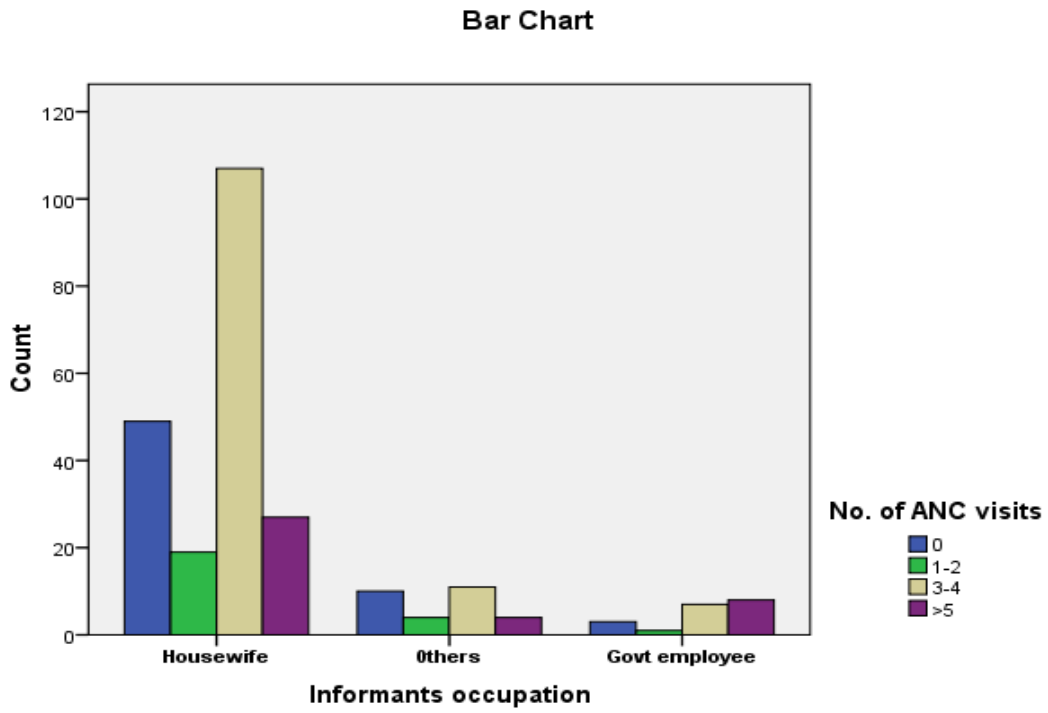


Table 27 shows the frequency distribution of the number of ANC visits of women by occupation. It is seen that the tendency to have ANC visits is higher among government employees than housewives and others category. There are 202 housewives out of which 49 (24.3%) had no ANC visits. However, 19 (9.4%) women in this category attended ANC for 1-2 times, 107 (52.9%) for 3-4 times and 27 (13.4%) for >5 times. Among the total 19 government employees, only 3 (15.8%) women did not attend ANC while 1 (5.3%), 7 (36.8%) and 8 (42.1%) attended for 1-2 times, 3-4 times and >5 times respectively. In others category, there are 29 women among which 10 (34.5%) had no ANC attendance while 4 (13.8) of them had 1-2 visits, 11 (37.9%) had 3-4 visits and 4 (13.8%) had >5 visits. The$\chi 2$ test revealed that the difference between occupation of women on the number of ANC attendance is statistically significant ($\chi 2$=13.776; df=6; p>0.05).

Table 28: Number of ANC visits according to age at marriage of women

Age at marriage (in years)	**Frequency n=250 (%)**	**No. of ANC visits**			
		0 n=62 (24.8 %)	**1-2 n=24 (9.6%)**	**3-4 n=125 (50.0%)**	**>5 n=39 (15.6%)**
Below 18	112 (44.8 %)	37(33.0**%**)	9 (8.1**%**)	52 (46.4**%**)	14 (12.5**%**)
18 and above	138 (55.2 %)	25 (18.2**%**)	15 (10.8**%**)	73 (52.9**%**)	25 (18.1**%**)

- $\chi 2=7.834$; df=3; $p<0.05$

Table 28 shows the distribution of number of ANC visits of women according to age at marriage. Women who visited ANC for 3-4 times recorded the highest percentage among both categories of age a marriage. There are 112 women who married before attaining 18 years of age. Among these women, 37 (33.0%) had no ANC visits while 9 (8.1%) visited ANC for 1-2 times, 52 (46.4%) visited for 3-4 times and 14 (12.5%) visited for >5 times. Further, out of the total 138 women who married after attaining 18 years, 15 (10.8%) had 1-2 numbers of ANC visits, 73 (52.9%) had 3-4 numbers and 25 (18.1%) had >5 numbers of ANC visits. There are also 25 (18.2%) women who had no ANC visits in this category. The table also shows that there is significant differences between age group at marriage of women with respect to number of ANC visits ($\chi 2=7.834$; df=3; $p<0.05$).

Table 29: Number of ANC visits according to parity

Parity	**Frequency n=250 (%)**	**No. of ANC visits**			
		0 n=62 (24.8%)	**1-2 n=24 (9.6%)**	**3-4 n=125 (50.0%)**	**>5 n=39 (15.6%)**
1 child birth	85 (34.0 %)	7 (8.2%)	10 (11.8%)	47(55.3 %)	21 (24.7 %)
2 child births	97 (38.8 %)	20 (20.6 %)	8 (8.3 %)	56 (57.7 %)	13 (13.4 %)
3+ child births	68 (27.2 %)	35 (51.5 %)	6 (8.8 %)	22 (32.4 %)	5 (7.3 %)

- $\chi 2 = 43.889$; df =6; $p < 0.05$

Figure 13: Bar chart showing the number of ANC visits according to parity

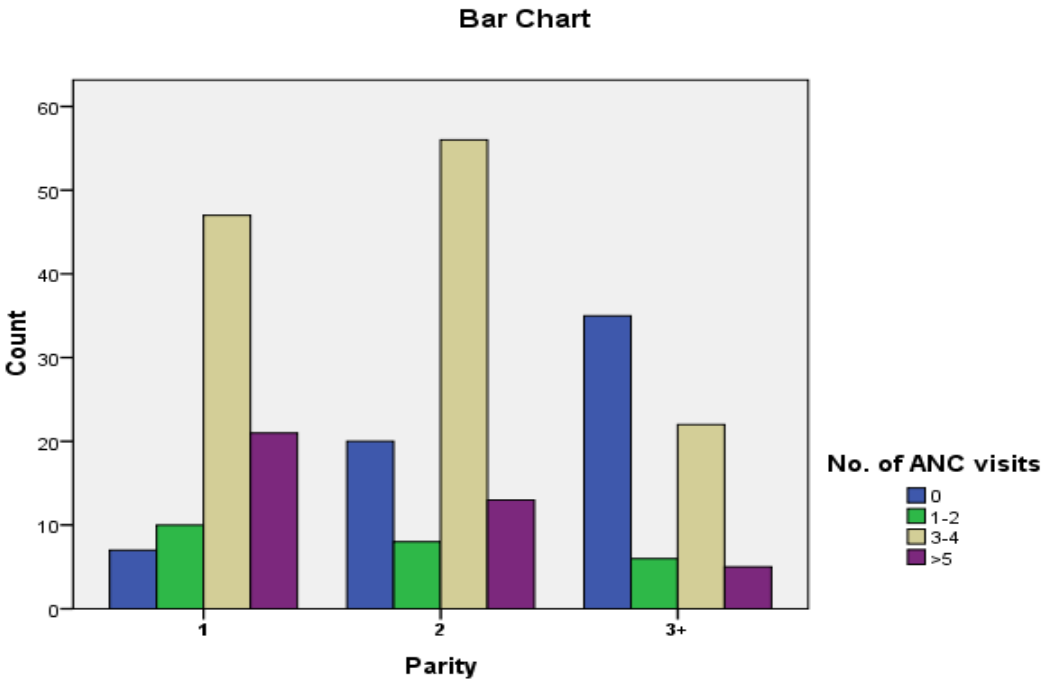


Table 29 shows the distribution of the number of ANC visits of women in relation to parity. It is found that there are altogether 85 women with a single child birth, out of which majority (55.3%) had 3-4 ANC visits. It is followed by women who had >5 visits (24.7%) and 1-2 visits (11.8%). Similarly, of the 97 women having 2 child births, most of them (57.7%) attended ANC for 3-4 times followed by >5 number of visits (13.4%) and 1-2 times (8.3%). Of all the 68 women having 3+ child births, 51.5% had no ANC visits. However, there are 32.4% women in this category who had ANC visits, 8.8% had 1-2 visits and 7.3% had >5 numbers of ANC visits. The $\chi 2$ test between parity in relation to the number of ANC visits is statistically significant ($\chi 2$ =43.889; df =6; p< 0.05).

Table 30: Place of ANC visits according to age group of women

Age groups (in years)	**Frequency n=250(100 %)**	**Place of ANC**			
		No n=62 (24.8%)	**Government n=153 (61.2 %)**	**Private n=9 (3.6 %)**	**Both n=26 (10.4 %)**
15-24	36(14.4 %)	0 (0.0 %)	28 (77.8 %)	2 (5.6 %)	6 (16.6 %)
25-34	86(34.4 %)	4 (4.6 %)	67 (77.9 %)	2 (2.3 %)	13 (15.2%)
35-49	128(51.2 %)	58 (45.3 %)	58 (45.3 %)	5 (3.9 %)	7 (5.5 %)

- $\chi 2$ =62.536; df =6; p<0.05

Figure 14: Bar chart showing place of ANC visits according to age group of women

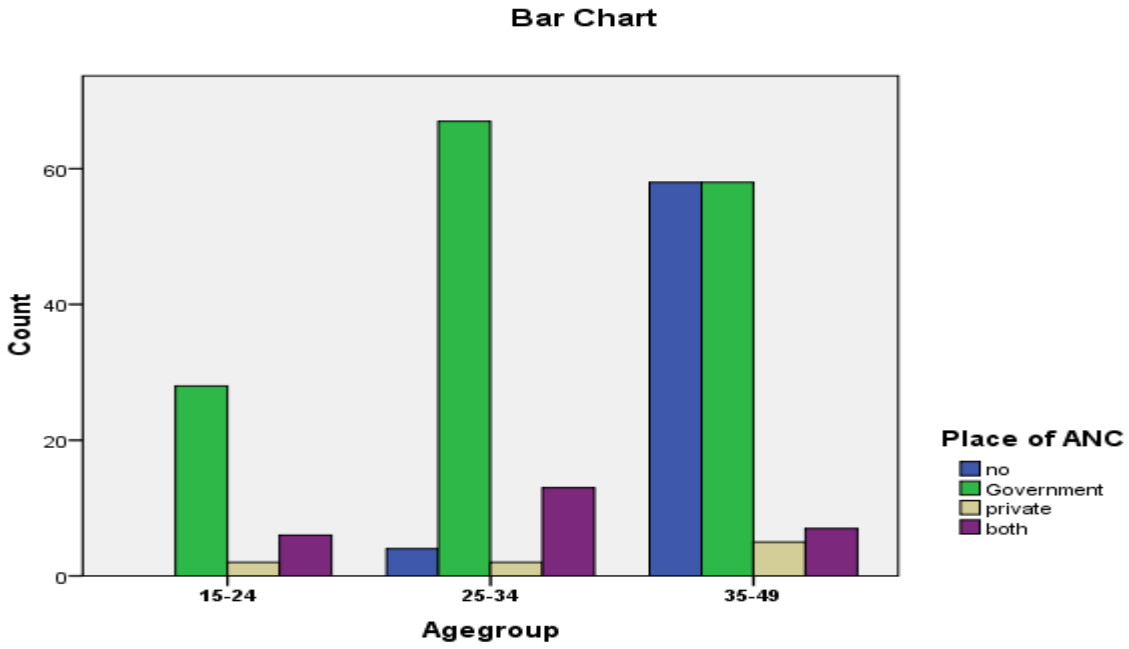


Table 30 shows the place of ANC visits of women in relation to their age groups. It is found that there are 36 women in 15-24 years, out of which 77.8% used government health centre for ANC, 16.6% used both government and private health centre while only 5.6% used private hospital. Likewise, the utilization of government health centre is recorded highest among women in 25-34 years of age. This age group has altogether 86 women, out of which 77.9% visited government health centre for ANC while 15.2% visited both government and private health centre and only 2.3% visited private health centre. Among the 128 women belonging to the age group 35-49 years, 45.3% had no ANC visits while the same percentage visited government health centre. Also, there are 3.9% who used private hospital and 5.5% who used both government and private health centre for ANC in this age group. The difference

between age groups regarding place of ANC visits is statistically significant ($\chi 2$ =62.536; df =6; p<0.05).

Table 31: Place of ANC visits according to marital status of women

Marital Status	**Frequency n=250 (100%)**	**Place of ANC**			
		No n=62 (24.8%)	**Government n=153 (61.2%)**	**Private n=9 (3.6%)**	**Both n=26 (10.4%)**
Living Spouses	239 (95.6%)	54 (22.6%)	150 (62.8%)	9 (3.8%)	26 (10.8%)
Widow/Separated	11(4.4%)	8 (72.7%)	3 (27.3%)	0 (0.0%)	0 (0.0%)

- $\chi 2$=14.432; df=3; p<0.05

Figure 15: Bar chart showing place of ANC visits according to marital status of women

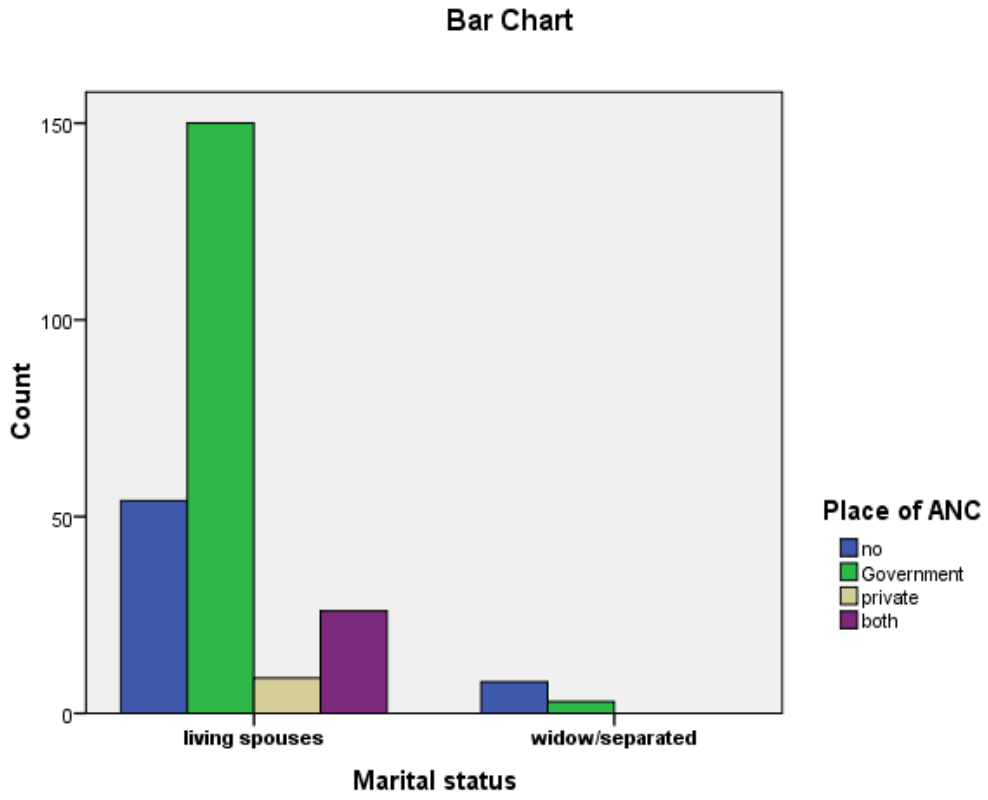


Table 31 shows the distribution of place of ANC visits of women according to marital status. It is shown that there are 239 women living with their spouses out of which 62.8% visited government health centre for ANC followed by both government and private health centre (10.8%) and private hospitals (3.8%). However, women who were widow or separated utilized only government health centre. Of the total 11 women in this category, 27.3% attended the said hospital whereas 72.7% had no ANC visits. The table also shows a significant difference ($\chi 2=14.432$; df=3; $p<0.05$) between marital status of women with respect to place of ANC visits.

Table 32: Place of ANC visits according to family size

Family size	Frequency n=250 (100%)	Place of ANC			
		No n=62 (24.8%)	Government n=153 (61.2%)	Private n=9 (3.6%)	Both n=26 (10.4%)
Small	185 (74.0%)	29(15.7%)	122 (65.9%)	9 (4.9 %)	25 (13.5 %)
Medium	54 (21.6 %)	24 (44.5%)	29 (53.7%)	(0.0 %)	1(1.8 %)
Large	11 (4.4 %)	9 (81.8%)	2 (18.2 %)	0 (0.0 %)	0 (0.0 %)

- $\chi 2=43.361$; df =6; $p<0.5$

Figure 16: Bar chart showing place of ANC visits according to family siz

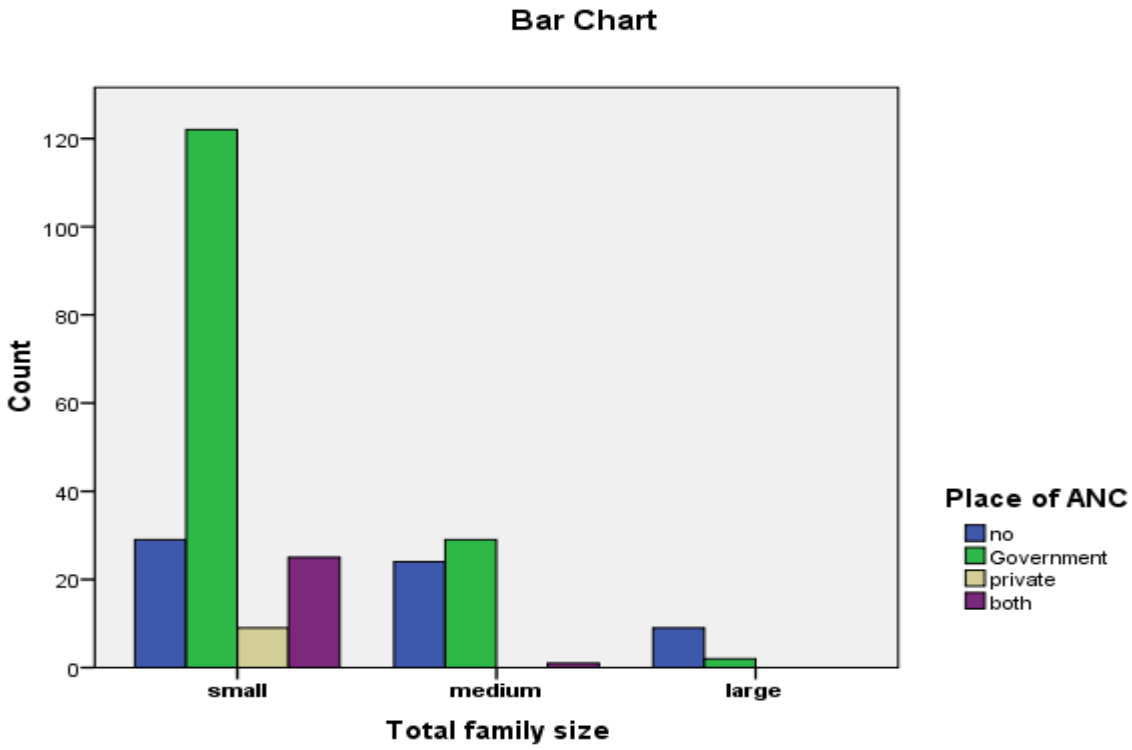


Table 32 shows the distribution of place of ANC visits of women by family size. It was found that, out of 185 women belonging to small size family, majority (65.9 %) of them received ANC from government health centre, followed by both government and private health centre (13.5%) and private health centre (4.9 %).Of all the 54 women in medium size family, 53.7% received ANC from government health centre while only 1.8% received ANC from both government and private health centre. The percentage of women having no ANC visits is quite high among women in large size family. There are 11 women in this category, out of which 81.8% had no ANC visits while 18.2% visited government health centre. It is further observed that place of ANC visits is significantly influenced by family size in this study population ($\chi 2$=43.361; df =6; p<0.5).

Table 33: Place of ANC visits according to educational level of women

Educational level	**Frequency n=250 (100%)**	**Place of ANC**			
		No n=62 (24.8%)	**Govt. n=153 (61.2%)**	**Private n=9 (3.6%)**	**Both n=26 (10.4%)**
No formal education	51 (20.4 %)	30 (58.8 %)	19 (37.2 %)	1 (2.0 %)	1 (2.0 %)
Primary education	56 (22.4 %)	18 (32.1 %)	31 (55.4%)	4 (7.1 %)	3 (5.4 %)
Secondary education	121 (48.4 %)	14 (11.6 %)	88 (72.7%)	2 (1.7 %)	17 (14.0 %)
Tertiary education	22 (8.8 %)	0 (0.0 %)	15 (68.2 %)	2 (9.1 %)	5 (22.7 %)

- $\chi 2$ = 61. 987; df =9; p <0.05

Figure 17: Bar chart showing the place of ANC visits according to educational level of women.

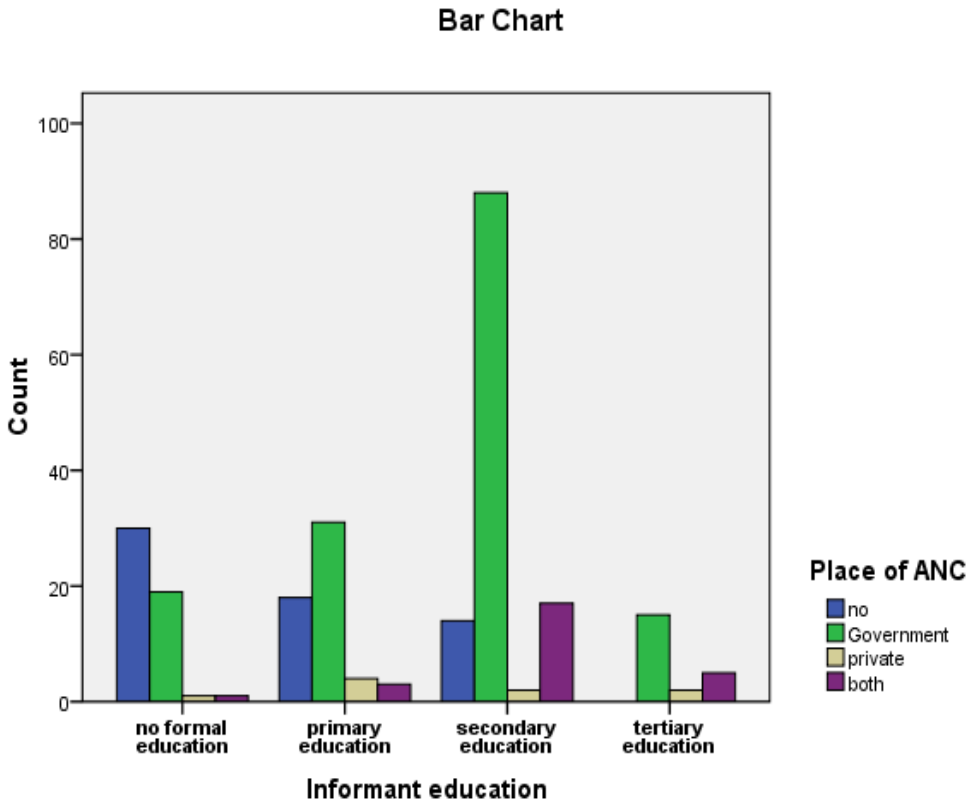


Table 33 depicts the distribution of place of ANC of women according to educational level. It is observed that there are 58.8%, out of the total 51 women who had no formal education and no ANC visits. In the same category, 37.2% visited government health centre while 2.0% visited private hospital and the 2.0% visited both government and private health centre. Like in the case of women having no formal education, women who received ANC from government health centre recorded highest percentage among women who completed primary education, secondary education and tertiary education. Of all the 56 women in primary education, 55.4% visited government health centre, 7.5% visited private health centre and 5.4% visited both government and private hospitals. This distribution out of the total 121 women in

secondary education is 72.7%, 1.7% and 14.0% respectively. Also, there are 22 women in tertiary education, out of which 68.2% received ANC from government health centre, 9.1% from private health centre and 22.7% from both government and private health centre. The differences between women's educational level on place of ANC check-up is statistically significant ($\chi 2 = 61.987$; df =9; $p < 0.05$).

Table 34: Place of ANC visits according to income groups

Income group	**Frequency n=250 (100%)**	**Place of ANC**			
		No n=62 (24.8 %)	**Government n=153 (61.2 %)**	**Private n=9 (3.6 %)**	**Both n=26 (10.4 %)**
High income group (> Rs. 9000)	10 (40.0%)	0 (0.0 %)	2 (20.0 %)	2 (20.0 %)	6 (60.0 %)
Middle income group (Rs. 4250-9000)	44 (17. 6%)	6 (13.6 %)	26 (59.1%)	2 (4.6 %)	10 (22.7 %)
Low income group (< Rs. 4250)	196 (78.4%)	56 (28.5 %)	125 (63.8 %)	5 (2.6 %)	10 (5.1 %)

- $\chi 2 = 52.387$; df = 6; $p<0.05$

Figure 18: Bar chart showing place of ANC visits according to income groups

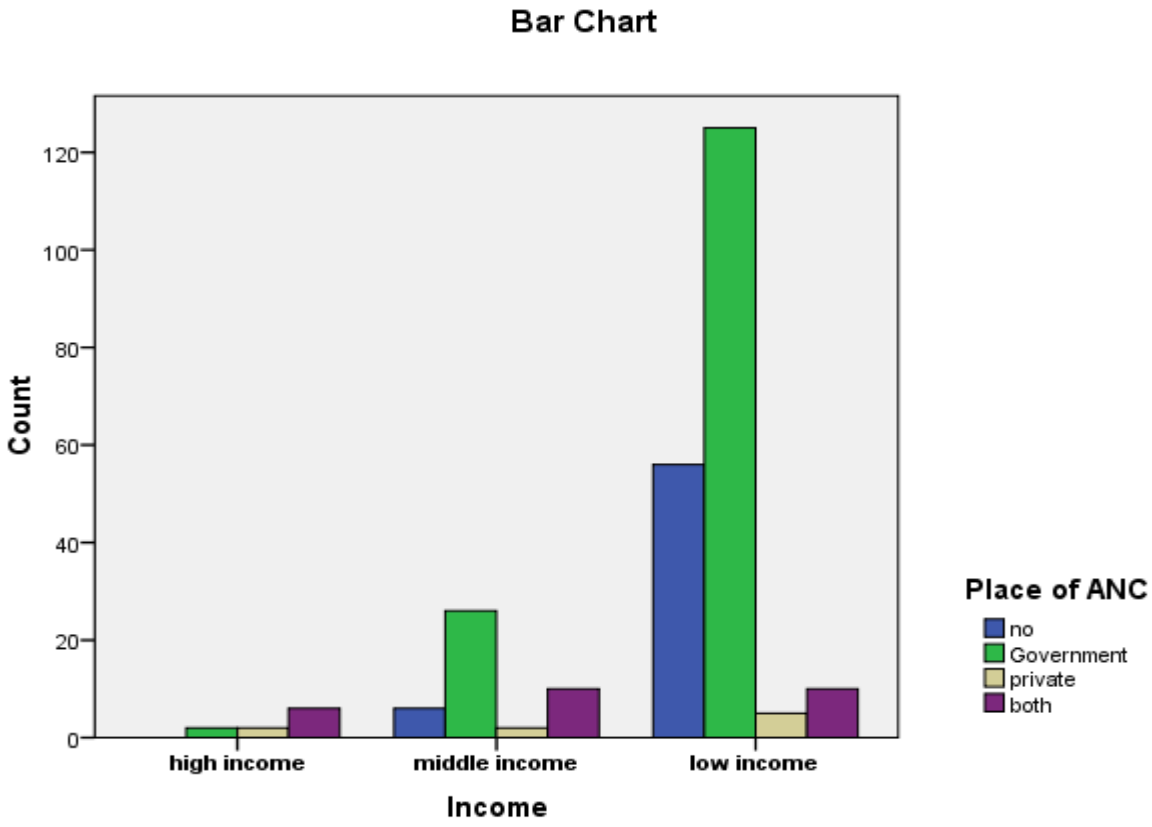


Table 34 shows the distribution of place of ANC of women in relation to income groups. While the percentage for utilization of government health centre is higher among middle and low income groups, utilization of both (government and private) health centre is higher among high income groups. Altogether, there are 10 women in high income group, out of which majority (60.0%) visited both government and private health centre together for ANC check-up, while equal number (20.0%) visited government and private health centre. The distribution for place of ANC check-up out of the total 44 women among middle income group is 59.1% for government hospitals, 4.6% for private hospitals and 22.7% for both government and private health centre. Out of the total 196 women in low income group, 63.8% received ANC

from government health centre while 2.6% received from private hospitals and 5.1% from both government and private hospitals. The table further observed that there is significant difference ($\chi 2 = 52.387$; df = 6; $p<0.05$) between different income groups on the place of visits for ANC check-up.

Table 35: Place of ANC visits by occupation of women

Occupation	**Frequency n=250 (100%)**	**Place of ANC**			
		No n=62 (24.8%)	**Government n=153 (61.2%)**	**Private n=9 (3.6%)**	**Both n=26 (10.4%)**
Housewives	202 (80.8 %)	49 (24.2 %)	128 (63.4%)	7 (3.5 %)	18 (8.9 %)
Govt. employees	19 (7.6 %)	3 (15.8 %)	9 (47.4 %)	2 (10.5 %)	5 (26.3 %)
Others	29 (11.6 %)	10 (34.5 %)	16 (55.2 %)	0 (0.0 %)	3 (10.3 %)

- $\chi 2=11.308$; df=6; $p>0.05$

*Others include daily wage earners, cultivators, and private business

Figure 19: Bar chart showing the place of ANC according to occupation of women

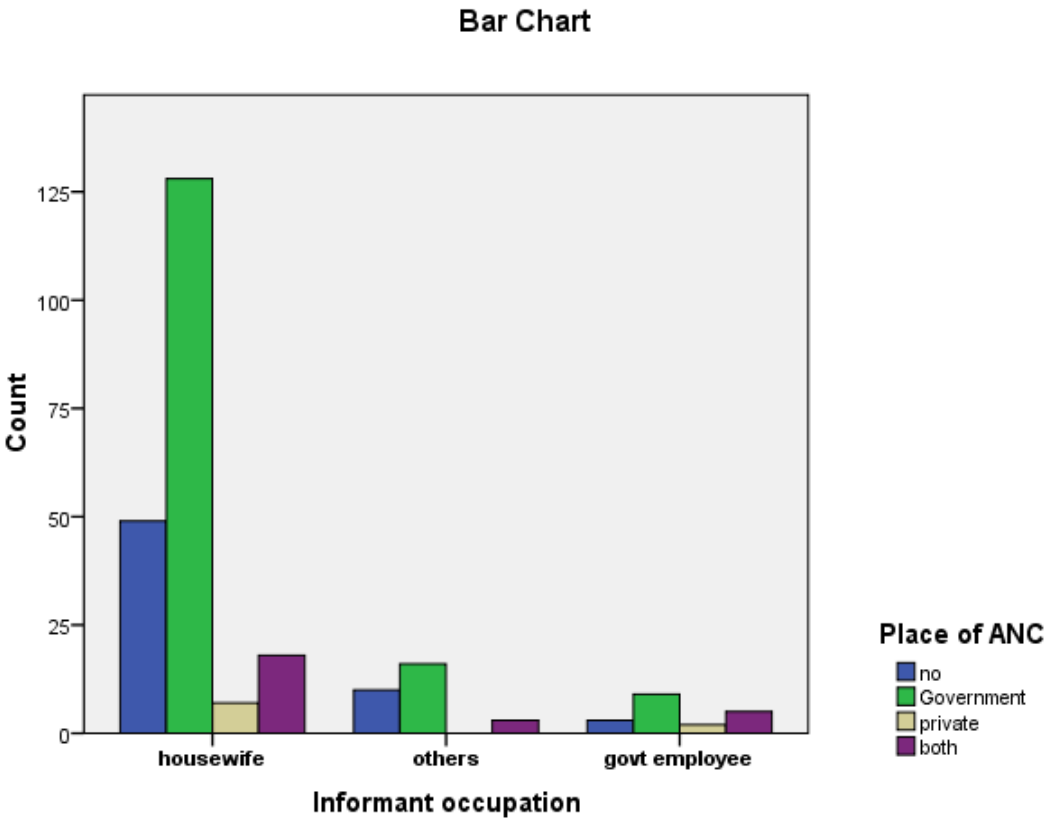


Table 35 shows the distribution of place of ANC visits of women according to occupation. It is found that the highest percentage of women received ANC from government health centre in all categories of occupations. Among the 202 housewives, 128 (63.4%) visited government health centre while 18 (8.9%) visited both government and private centre, and 7 (3.5%) visited private health centre for ANC. Of all the 19 employed women, 9 (47.4%) received ANC from government health centre, 5 (26.3%) from both government and private health centre, and only 2 (10.5%) from private health centre. In others category, there are altogether 29 women out of which 16 (55.2%) visited government health centre for ANC while only 3 (10.3%) visited both government and private health centre. The table also shows that

there is no significant differences ($\chi 2=11.308$; df=6; $p>0.05$) between occupations of women with respect to their place of ANC visits.

Table 36: Place of ANC visits according to age at marriage

Age at marriage (in years)	**Frequency n=250 (100 %)**	**Place of ANC**			
		No n=62 (24.8%)	**Government n=153 (61.2%)**	**Private n=9 (3.6%)**	**Both n=26 (10.4%)**
Below 18	112 (44.8 %)	37 (33.0 %)	61 (54.5 %)	4 (3.6 %)	10 (8.9 %)
Above 18	138 (55.2 %)	25 (18.1 %)	92 (66.7 %)	5 (3.6 %)	16 (11.6 %)

- $\chi 2=7.476$; df =3; $p>0.05$

Figure -20: Bar chart showing the place of ANC visits by age at marriage

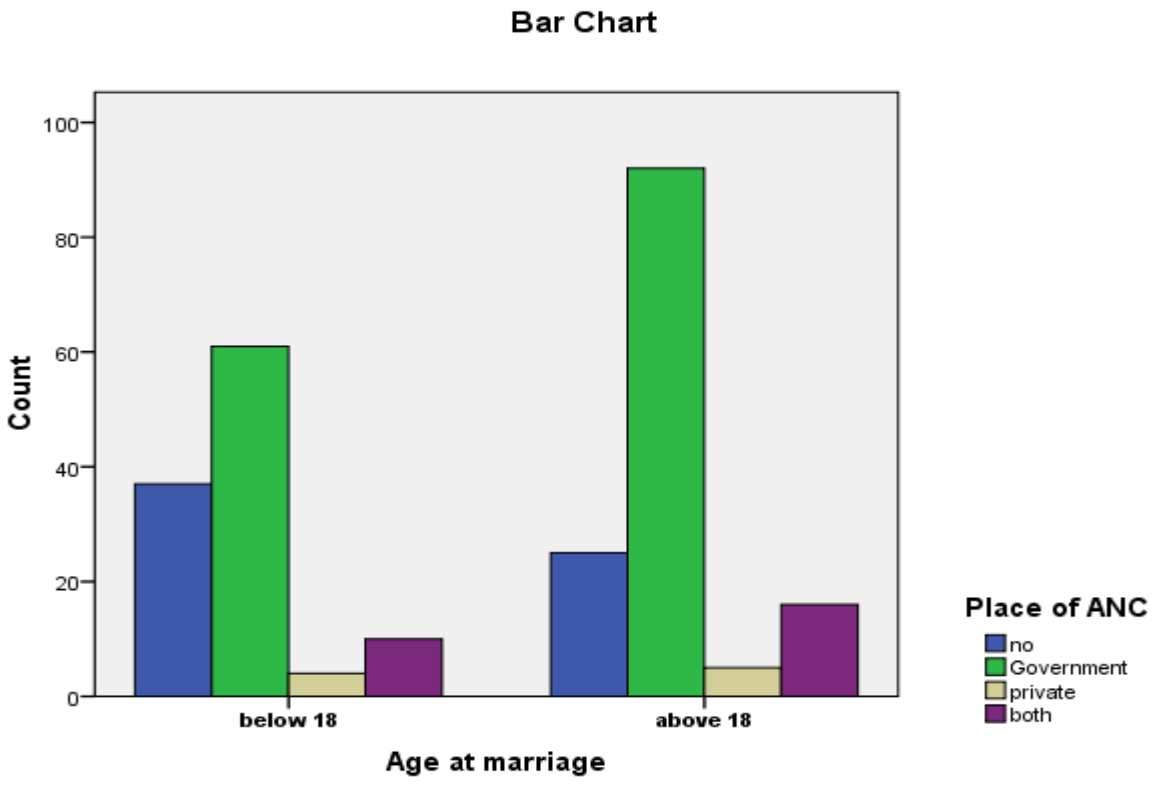


Table 36 shows the distribution of place of ANC visits of women in relation to age at marriage. Out of the total 112 women who married at the age below 18 years, the highest percentage (54.5%) received ANC from government health centers, followed by both government and private centre (8.9%) and private centre (3.6%). Likewise, majority (66.7%) women out of 138 women who married after attaining 18 years received ANC from government health centre. Also, 11.6% had ANC from both government and private health centre and 3.6% from private centre. The$\chi 2$ test between age at marriage of women on place of ANC visits is found to be statistically not significant ($\chi 2=7.476$; df =3; $p>0.05$).

Table 37: Place of ANC visits according to parity

Parity	**Frequency n=250 (100 %)**	**Place of ANC**			
		No n=62 (24.8%)	**Government n=153 (61.2%)**	**Private n=9 (3.6%)**	**Both n=26 (10.4%)**
1 child birth	84 (34.0 %)	8 (9.5 %)	62 (72.9 %)	0 (0. 0%)	15 (17.6 %)
2 child births	97 (38.8 %)	19 (19.5 %)	60 (61.9 %)	9 (9.3 %)	9 (9.3 %)
3+ child births	68 (27.2 %)	35 (51.5 %)	31 (45.6 %)	0 (0.0 %)	2 (2.9 %)

- $\chi 2=55.556$; df=6; $p<0.05$

Figure 21: Bar chart showing the place of ANC visits according to parity

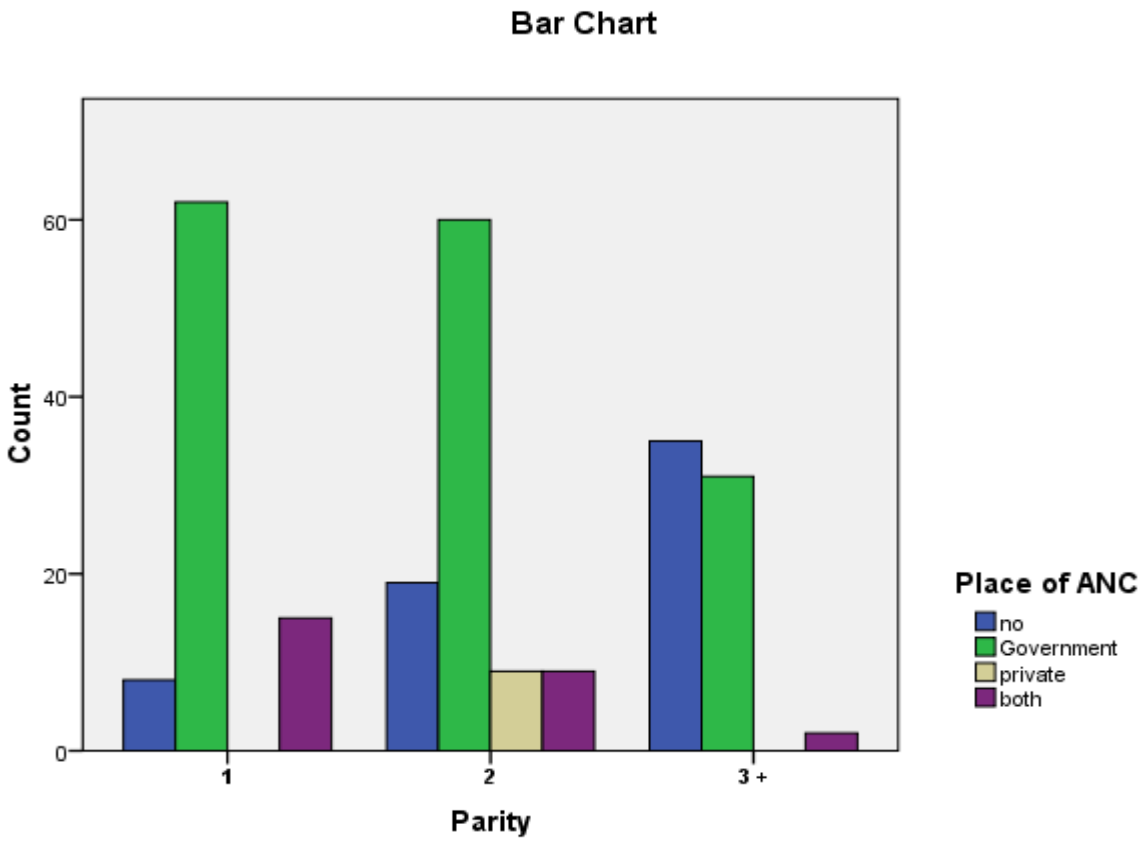


Table 37 shows that the most common health centre for ANC during pregnancy is government health centre in all categories of parity. It is seen that there are 84 women having 1 child birth out of which 62 (72.9%) received ANC from government health centre while 15 (17.6%) received from both government and private health centre. Altogether, there are 97 women with 2 child births, out of which 60 (61.9%) visited government health centre for ANC while 9 (9.3%) visited both government and private centre and the same percent visited private health centre. Of all the 68 women having 3+ child births, 31 (45.6%) of them visited government health centre for ANC

and only 2 (2.9%) visited both government and private health centre. Further, the difference between parity with respect to place of ANC visits is found statistically significant ($\chi 2$=55.556; df=6; p<0.05).

Table 38: Awareness of ANC by age group of women

Age group (in years)	**Frequency n=250 (100 %)**	**Aware**	
		Yes n=198 (79.2 %)	**No n=52 (20.8 %)**
15-24	36 (14.4 %)	36 (100.0 %)	0 (0 %)
25-34	86 (34.4 %)	84 (97.7 %)	2 (2.3 %)
35-49	128 (51. 2 %)	78 (60.9%)	50 (39.1 %)

- $\chi 2$=53.187; df =2; p<0.05

Figure 22: Bar chart showing the awareness of ANC by age group of women

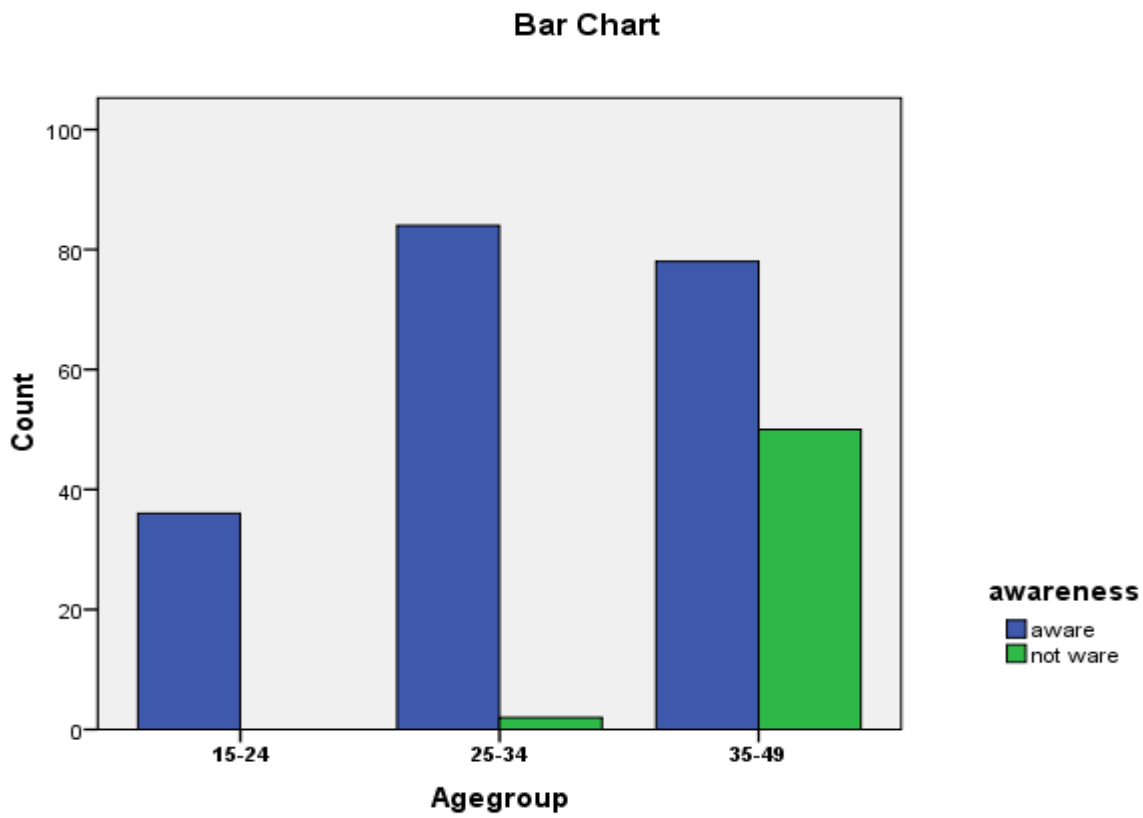


Table 38 shows the distribution of awareness of ANC according to age group. It is observed that the rate of awareness about ANC decreases with the increasing age group of women. All the 36 women in the age group 15-24 years were reported to be aware of ANC. Out of the total 86 women in the age group 25-34 years, 84 (97.7%) were found to be aware of ANC whereas 78 (60.9%) out of the total 128 women in the age group 35-49 were aware of ANC. The$\chi 2$ test between age groups with respect to ANC awareness is found statistically significant ($\chi 2=53.187$; df =2; $p<0.05$).

Table 39: Awareness of ANC according to marital status of women

Marital status	**Frequency** **n= 250 (100 %)**	**Aware**	
		Yes **n=198 (79.2 %)**	**No** **n=52 (20.8 %)**
Living spouses	239 (95.6 %)	194 (81.2 %)	45(18.8 %)
Widow/ separated	11 (4.4 %)	4 (36.4 %)	7 (63.6 %)

- $\chi 2 = 12.817$; df=1; $p<0.05$

Figure 23: Bar chart showing the awareness of ANC according to marital status of women

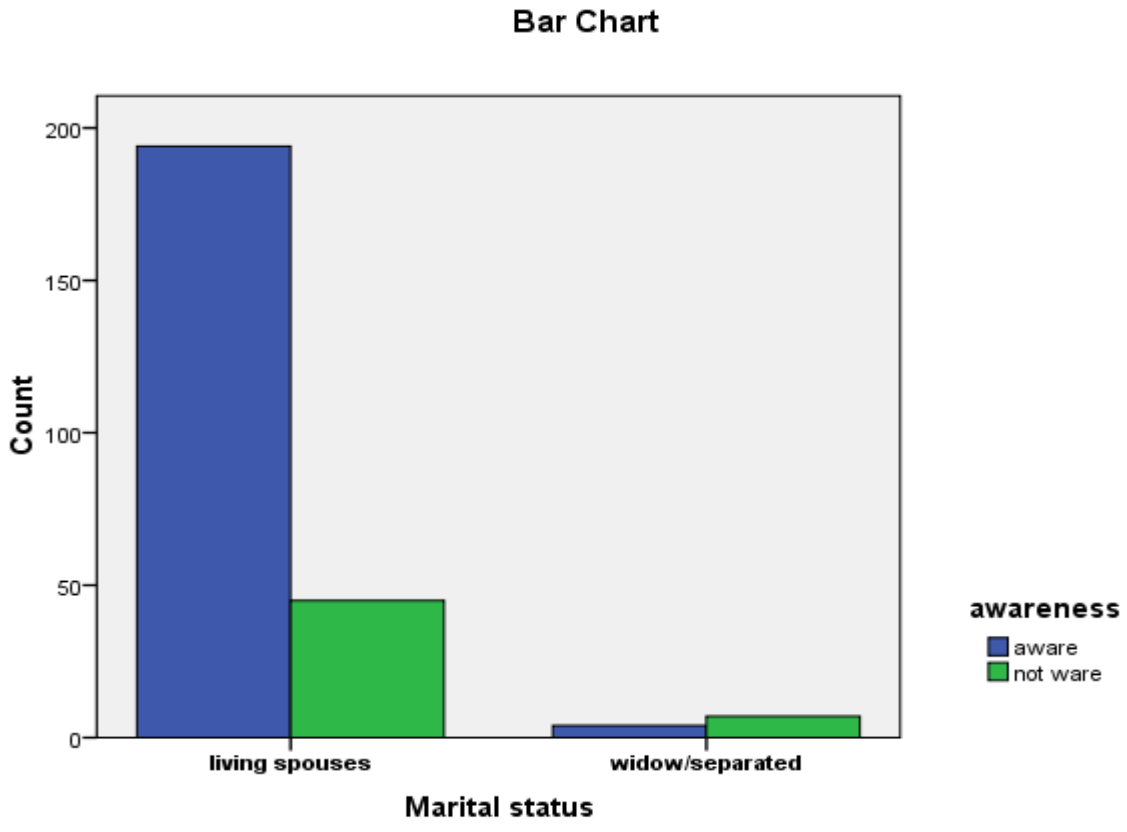


Table 39 shows the frequency distribution of awareness about ANC of women by marital status. Comparing the two categories of marital status, women living with spouses recorded a much higher percentage of ANC awareness than widow or separated women. Altogether, there are 239 women living with their spouses, out of which 194 (81%) reported that they were aware of ANC. However, among the 11widow or separated women, majority (63.6%) were not aware of ANC while the remaining 36.4% were aware. The difference between marital status regarding awareness of ANC is found to be statistically significant ($\chi 2 = 12.817$; df=1; $p<0.05$).

Table 40: Awareness of ANC according to family size

Family size	**Frequency** **n=250 (100 %)**	**Aware**	
		Yes **n=198 (79.2 %)**	**No** **n=52 (20.8 %)**
Small	185 (74.0 %)	164 (88.6 %)	21 (11.4 %)
Medium	54 (21.6 %)	32 (59.3 %)	22 (40.7 %)
Large	11 (4.4 %)	2 (18.2 %)	9 (81.8 %)

- $\chi 2=47.921$; df =2; $p<0.05$

Figure 24: Bar chart showing the awareness of ANC according to family size

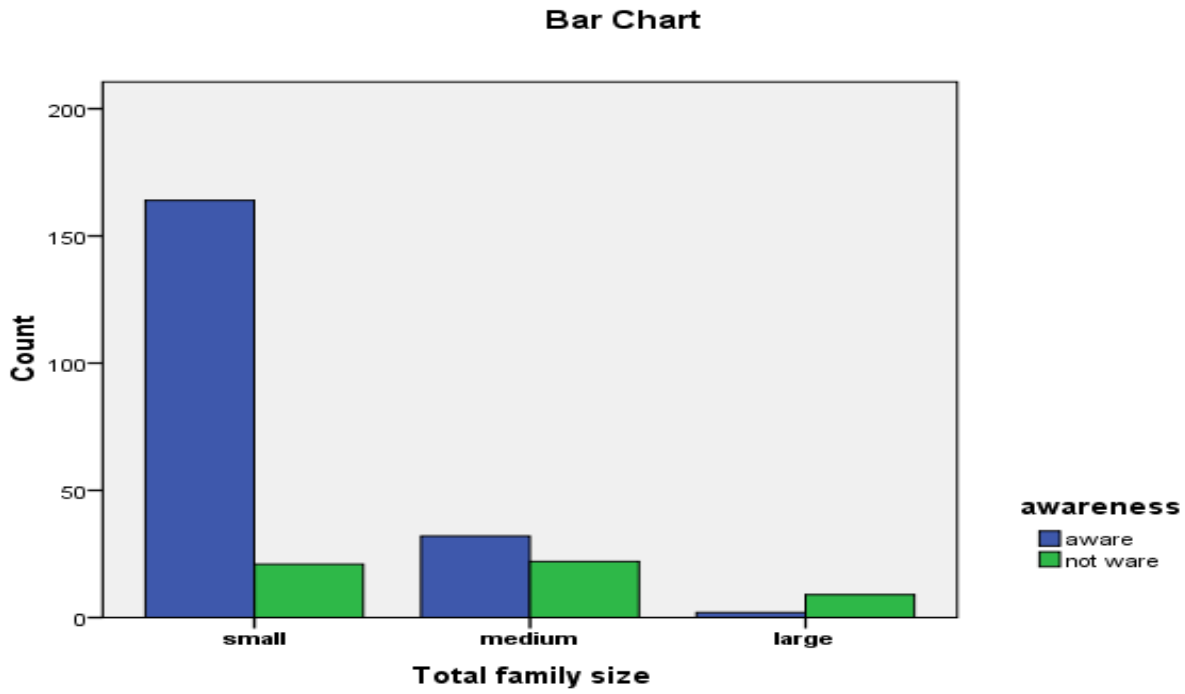


Table 40 shows the frequency distribution of ANC awareness of women by family size. It is seen that most of the women in small and medium family sizes reported that they were aware of ANC. Of the total 185 women in small size family, 164 (88.6%) were aware of ANC while 32 (59.3%) women out of the total 54 in medium size family were aware of ANC. However, there are only 2 (18.2%) out of the total 11 women in large size family were aware of ANC. The difference between family sizes with respect to ANC awareness is statistically significant ($\chi 2=47.921$; df =2; $p<0.05$).

Table 41: Awareness of ANC according to educational level of women

Educational level	**Frequency n=250 (100%)**	**Aware**	
		Yes n=198 (79.2 %)	**No n=52 (20.8 %)**
No formal education	51 (20.4 %)	22 (43.1 %)	29 (56.9 %)
Primary education	56 (22.4 %)	42 (75.0 %)	14 (25.0 %)
Secondary education	121 (48.4 %)	112 (92.6 %)	9 (7.4 %)
Tertiary education	22 (8.8 %)	22 (100 %)	0 (0 %)

- $\chi 2=59.754$; df = 3; $p< 0.05$

Figure 25: Bar chart showing the awareness of ANC by educational level of women

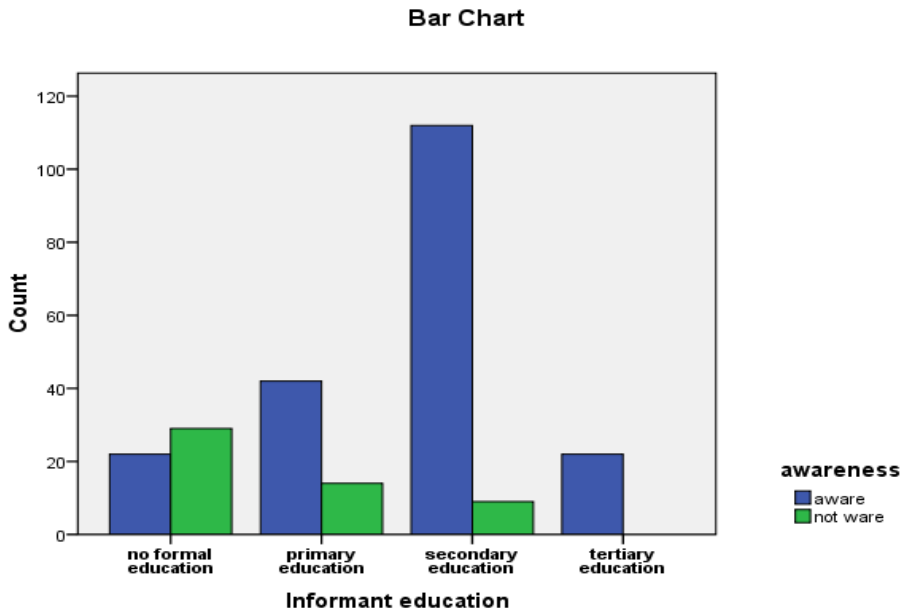


Table 41 shows the frequency distribution of awareness about ANC of women according to educational level. It is found that the rate of ANC awareness tends to

increase along with the increasing level of women's education. However, majority of women (56.9%) out of the total 51 women having no formal education were not aware of ANC. In primary education, there are altogether 56 women out of which 42 (75.0%) were aware of ANC. The awareness rate of ANC among secondary educated women is 92.6% out of the total 121 women whereas the same among tertiary educated women is 100% out of the total 22 women. The difference between educational levels of women in relation to their ANC awareness is also found to be statistically significant ($\chi 2=59.754$; df = 3; $p< 0.05$).

Table 42: Awareness of ANC according to income groups

Income group	**Frequency** **n=250 (100 %)**	**Aware**	
		Yes **n=198 (79.2 %)**	**No** **n=52 (20.8 %)**
High income group (> Rs. 9000)	10 (40.0 %)	10 (100 %)	0 (0 %)
Middle income group (Rs. 4250-9000)	44 (17. 6 %)	40 (90.9 %)	4 (9.1 %)
Low income group (< Rs. 4250)	196 (78.4 %)	148 (75.5 %)	48 (24.5 %)

- $\chi 2=7.908$; df=2; $p>0.05$

Figure 26: Bar chart showing awareness of ANC by income groups

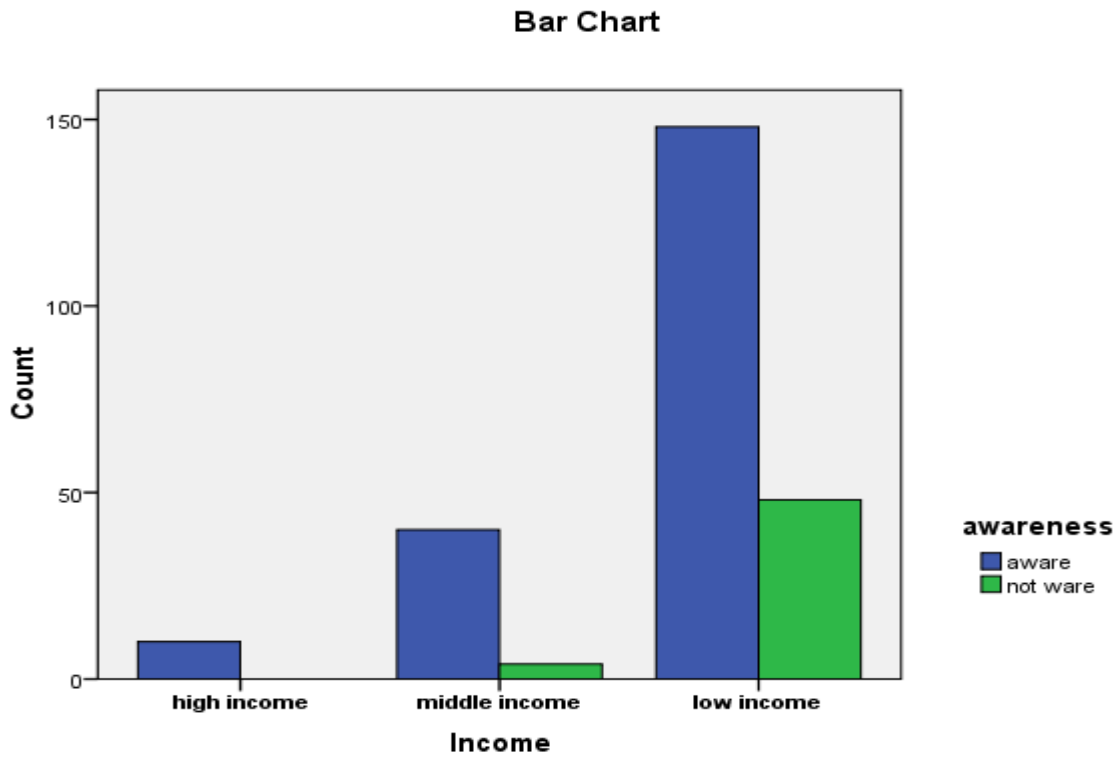


Table 42 shows the distribution for ANC awareness of women by income groups. It shows that the percentage of ANC awareness decreases with the decreasing level of income groups. All women (10) in high income groups were found to be aware of ANC. Out of the total 44 women in middle income group, 40 (90.9%) were aware of ANC whereas 148 (75.5%) women out of the total 196 in low income group were reported t be aware of ANC. However, there is no statistical difference ($\chi 2=7.908$; df=2; $p>0.05$) between income groups with respect to the awareness of ANC in this population.

Table 43: Awareness of ANC according to occupation of women

Occupation	**Frequency** **n=250 (100 %)**	**Aware**	
		Yes **n=198 (79.2 %)**	**No** **n=52 (20.8 %)**
Housewife	202 (80.8%)	161(79.7%)	41(20.3%)
Govt employee	19 (7.6%)	18 (94.7%)	1 (5.3%)
Others	29 (11.6%)	19 (65.5%)	10 (34.5%)

- $\chi 2=6.111$; df=2; $p<0.05$

Figure 27: Bar chart showing the awareness of ANC by occupation of women

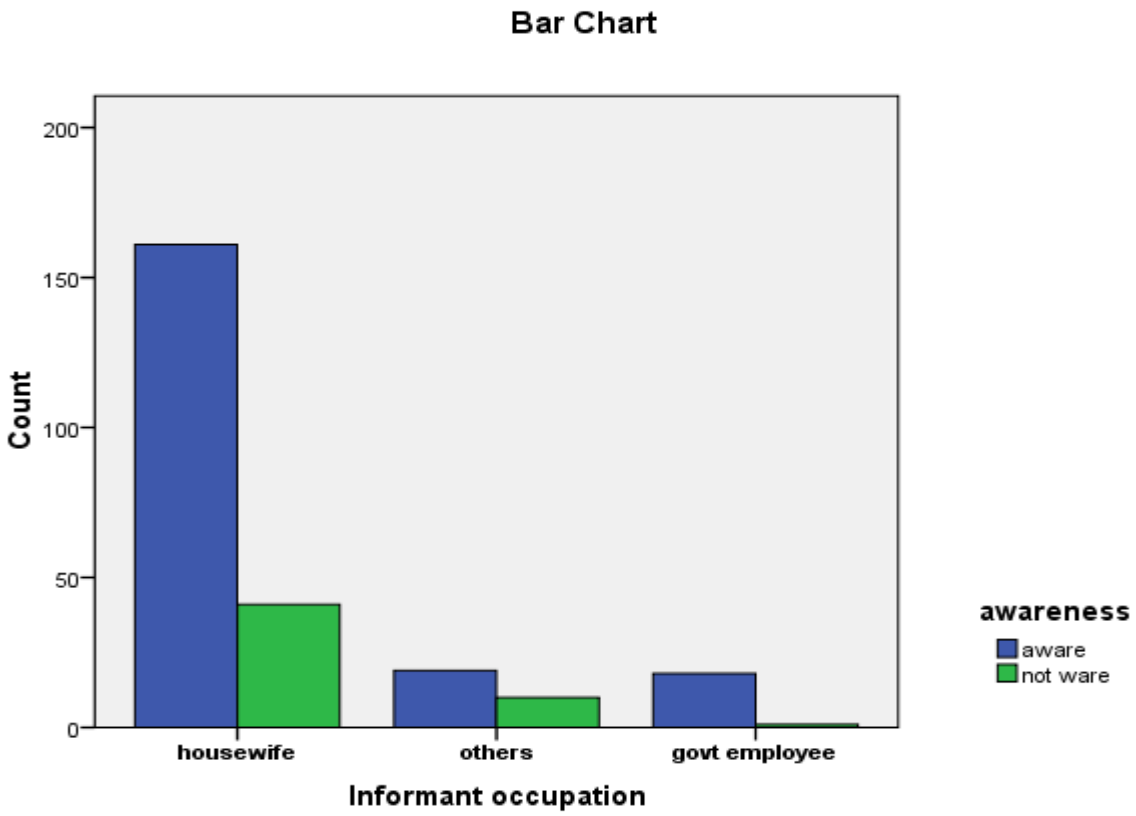


Table 43 shows the distribution of awareness about ANC of women according to occupation. It shows that the percentage frequency of women who were aware of ANC is much higher than those who were not aware, in all categories of occupation. There are 202 housewives, out of which 161 (79.7%) were aware of ANC. There are altogether 19 women who were government employee, out of which 18 (94.7%) were aware of ANC. Of all the 29 women in others category, 19 (65.5%) were reported to be aware of ANC. The$\chi 2$ test further shows a significant difference ($\chi 2=6.111$; df=2; $p<0.05$) between women's occupation in relation to awareness of ANC.

Table 44: Awareness of ANC according to age at marriage of women

Age at marriage	**Frequency** **n=250 (100 %)**	**Aware**	
		Yes **n=198 (79.2 %)**	**No** **n=90 (20.8 %)**
<18	112 (44.8%)	82 (73.2%)	30 (26.8%)
18+	138 (55.2%)	116 (84.1%)	22 (15.9%)

- $\chi 2=4.413$; df =1; $p<0.05$

Figure 28: Bar chart showing the awareness of ANC by age at marriage of women

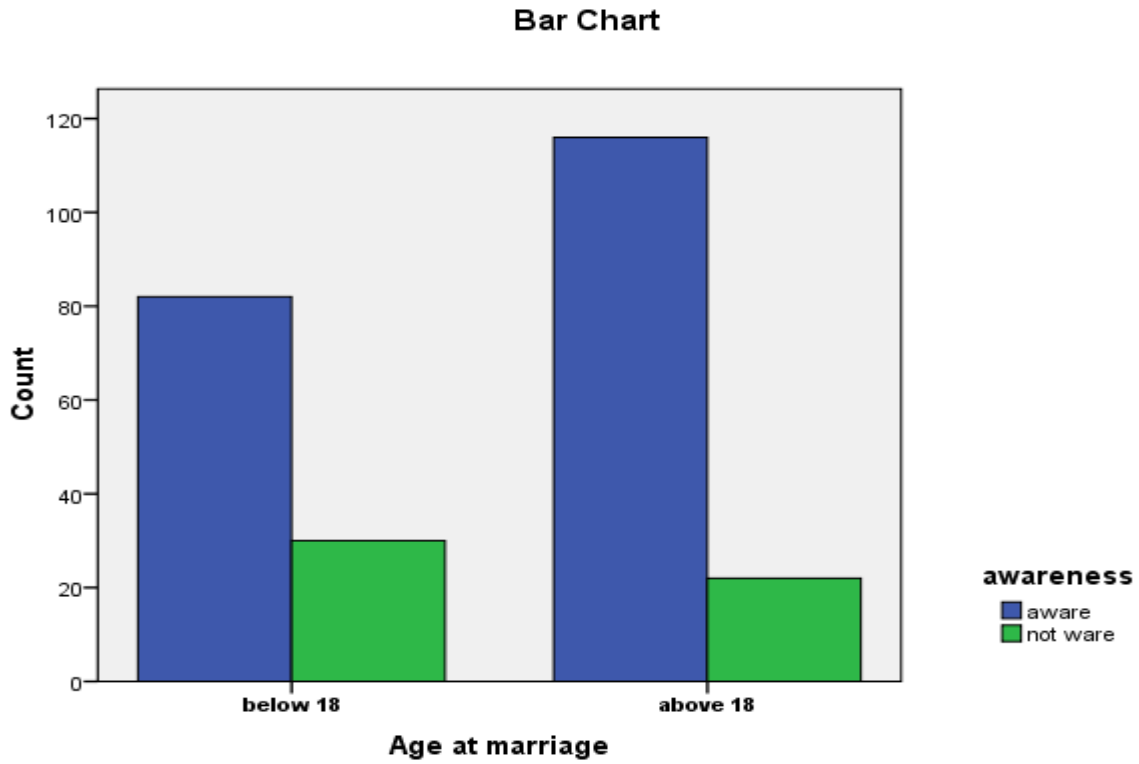


Table 44 shows the distribution regarding awareness of ANC of women by age at marriage. It shows that the rate of awareness regarding ANC is slightly higher among women who married after attaining 18 years of age. There are altogether 112 women who married before attaining 18 years, among which 82 (73.2%) were aware of ANC. Whereas, there are 138 women who married after attaining 18 years of age, out of which 116 (84.1%) were aware about ANC. Further, awareness of ANC between the age groups at marriage is found to be statistically significant ($\chi 2=4.413$; df =1; $p<0.05$).

Table 45: Awareness of ANC according to parity

Parity	**Frequency** **n=250 (100 %)**	**Aware**	
		Yes **n=198 (79.2 %)**	**No** **n=90 (20.8%)**
1 child birth	85 (34.0)	78 (91.7)	7 (8.3)
2 child births	97 (38.8)	85 (87.6)	12 (12.4)
3+ child births	68 (27.2)	35 (51.5)	33 (48.5)

- $\chi 2=44.069$; df =2; $p<0.05$

Figure 29: Bar chart showing the awareness about ANC according to parity

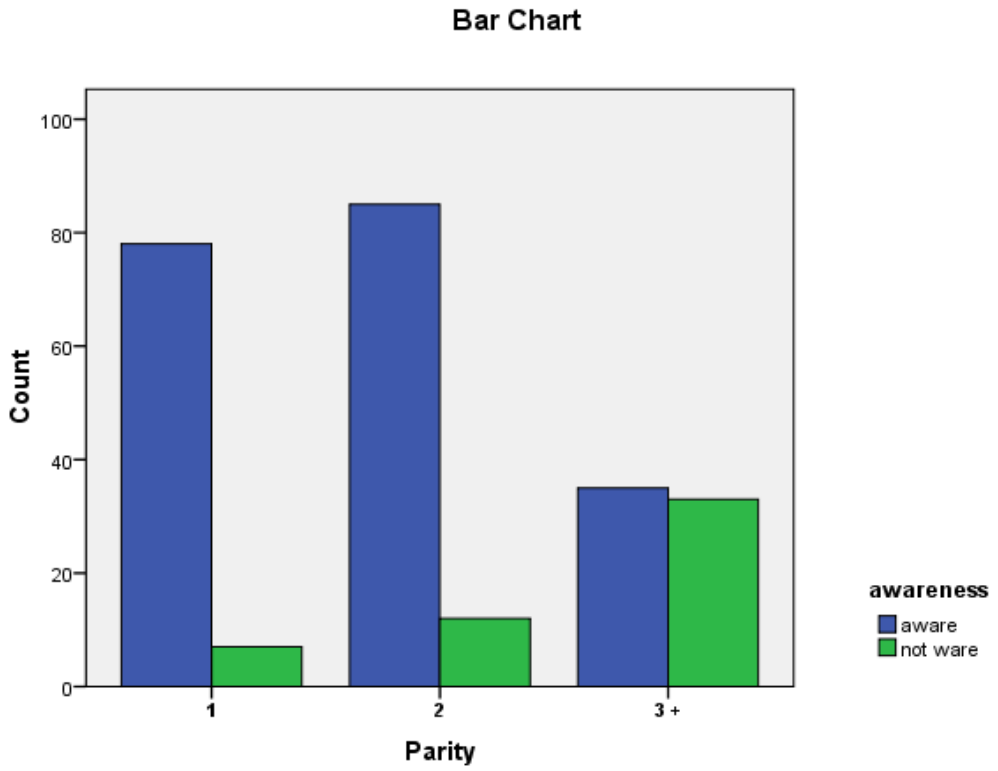


Table 45 shows the distribution for awareness level of women in relation to parity. It

is found that, there are altogether 85 women having 1 child birth, out of which 78 (91.7%) were aware of ANC while the remaining 7 (8.3%) were not aware. Among women having 2 child births the frequency of women who were aware of ANC, out of the total 97 women is 85 (87.6%). There are also 68 women having 3+ child births, out of which 35 (51.5) were aware of ANC while 33 (48.5%) were not aware of ANC. The$\chi 2$ test shows that the difference between parity with respect to awareness of ANC is statistically significant ($\chi 2$=44.069; df =2; p<0.05).

CHAPTER V

DISCUSSION

The present study was conducted among women of Sumbuk village, South Sikkim. The purpose of the present study was to analyze the various socio-demographic factors associated with antenatal care services utilization.

The present study has revealed that, maternal age was significantly associated with antenatal care services utilization, the younger the expectant woman is, she is more likely to use antenatal care services. This findings is similar to the previous findings of Arthur (2012); Arop (2015) and Owili et al., (2016).This is probably due to two reasons: Firstly, the study collected data on ANC services in relation to the modern ANC services that provided in hospital and younger mothers are more aware and knowledgeable about various consequences and advantages of modern ANC utilization. Secondly, older women more tend to rely on traditional and home- based health practices and may believe that modern ANC or health care services makes difference in the outcome of childbirth. This present findings contradicts to the findings by Zhao et al., In china it was found that woman who gets pregnant between the age group of 25 and 30 and older than that utilized antenatal care more than younger pregnant woman (Zhao et al., 2012).

The present study has found that marital status was significantly associated with the utilization of ANC services. Women who are married or lived with spouses found to be more aware and are more likely to use ANC services than those who were unmarried, widow, separated or divorced. The best explanation is probably that women in Sumbuk village are very conservative when it comes to moral values. Women who lived without a partner may not have the courage to show their

pregnancy publically due to the social atmosphere and they may fear to access various maternal health services including antenatal care. In hospital during pregnancy check-up there will be need to address the name of the husband or partner and in our society giving childbirth without a partner is still considered as a social taboo. This findings is in line with previous findings of Kassyou, (2008);Anchang-Kimbi et al., (2014); Arop, (2015) and Kim et al., (2014).Many previous findings gave the reasons for the women living with partner tend to utilize more antenatal care services than those who lived without spouses, could be due to the fact that they received more care and support from their husbands and family members, and gets acceptability from the society during pregnancy as compared with unmarried, separated/ divorced and widow women (Pell et al., 2013;Okedo-Alex IN et al., 2016).

The present finding shows that there was a significant association between a family size and utilization of ANC services among the informants of the study village. Respondents who have small and medium family size were more likely to utilize ANC services than those who have large family size. This findings is similar to the findings of Abosse et al., (2010); Rurangirwa et al., (2017); Tolefac et al., (2017); Akowuah et al., (2018); and Tolefac et al., (2019).The justification for that might be, due to excessive demand of money, time and other resources during pregnancy check-up, women with large family sizes tend to underutilize Antenatal care services (Abor et al., 2011; Akowuah et al., 2018). Another reason, could be women who live in large family size expend more time on their numerous responsibilities for cooking, cleaning, collecting water or fuel, than spending their time on their own health (Abosse et al., 2010). Previous studies by Akowuah et al., (2018) also suggest that a large family size have low family income and may lack to access medical facilities including antenatal care services.

Likewise, the present study has revealed that level of education of informants was significantly influences on utilization of antenatal care services in studied village. The findings shows that women with tertiary educational level utilized more ANC services as recommended by World Health Organization, as compared with those women with no formal education or below secondary level of education. The same influence of women education on utilization of Antenatal care services was found Arop, (2015) and Okedo- Alex In et al., (2019). ‘‘This might be attributed to the fact that educated women informed about the importance of Antenatal care services and educated mothers might be achieved better autonomy in decision making process at home and have more space to communicate with others members of family on various maternal health issues including their pregnancies and complications that may arise during pregnancy’’ (Osario, 2014; Arop; 2015. Okedo-Alex IN et al., 2016). ‘‘Furthermore, previous research has reported that educated women account for higher number of antenatal care visits compared to uneducated women living in a similar setting and economic status, because increased education improves women’s knowledge of high-risk prenatal warning signs and treatment, and ultimately promotes positive attitudes toward health care and utilization of services’’ (Umar, 2017). In contrast to the present findings a study conducted in Pakistan revealed education did not have any influences on antenatal care services utilization (Tekelab et al., 2019).

The present findings observed that there was a significant influence of household income on ANC utilization. The women with high income level tend to utilize more Antenatal care services, or ANC visit, as compared with those women with middle and low income. This might be attributed to the fact that women who want to utilize better antenatal care services have to spend resources for transportation, accessibility

and medication. Pregnant mother who have less income may not be able to access antenatal care services because of high medical costs (Okedo – Alex et al., 2019). Thus, because of financial constraints, such women may not visit ANC and limit the number of ANC visits. This impact of household income was documented in many previous studies like Addai, (2000); Celik et al., (2000) and Bloom et al.,(2001). The present study found that there was no significant association between Occupations of respondents with ANC utilization. In contrast to the present findings, many previous studies revealed those pregnant mothers who were employed was found to utilize antenatal care services more than those women who were unemployed and housewives. This might be due to the fact that woman who were more educated get employed and earn more income which ultimately leads them to utilization of maternal health facilities including antenatal care (Okedo- Alex et al., 2019).

Again, the present findings suggest that parity was significantly associated with utilization of Antenatal care services. Pregnant women with fewer children were more likely to receive ANC services as compared to women with large number of children. The justification for that might be, pregnant mother with one or two child birth likely to attend more antenatal care services in contrast to mother with more than three children, which shows that less parity mother are more likely to use ANC than those with high parity (Tekelab et al., 2019). In addition, "low number of parity to a woman associated with more frequent ANC used, this might be attributed to low educational level or close attachment to local cultures and traditions which restrict women with high parity to use ANC even if she is at risk" (Arop. 2015). This finding was found to be consistent with previous studies by Abel et al., (2012); Ali et al., (2012); Gross et al., (2012); Zhao et al., (2012) and Gitonga, (2017). On the contrary other studies had revealed that a pregnant woman a high number of children were

more likely to use ANC services as compared to women with less number of children. “The high utilization of ANC services in this group might be attributed to related health complications as a result of the increased number of pregnancies. Moreover, the knowledge, experience and confidence a woman with more children gains from previous pregnancies may lead to more frequent ANC utilization’’ (Arop, 2015).

Also, the present results of the study show that maternal age, marital status, family size, Educational level, household wealth, age at marriage and parity had a significant association with place of ANC and awareness level of ANC among informants in study village.

CHAPTER VI

CONCLUSION

Pregnancy is the most crucial and important things for every women. To give safe and healthy childbirth is the most desirable things that every pregnant women dream. Good care during pregnancy is important for the health of the mother and the childbirth. Most women have uneventful pregnancies and childbirth but sudden and unpredictable complication may happen at any time to any pregnant women. Antenatal care is one of the optimistic approaches to achieve healthy and safe pregnancy before and after pregnancy. Those pregnant women who adopt antenatal care services during pregnancy will be more safe and healthy as compared to those mothers who do not adopt it, as ANC help pregnant women and her family for childbirth by building confidence and friendly atmosphere between the expectant women and her health care provider.

During ANC visits the entire perquisite for safe delivery will provide and various general examinations like measurement of height and weight, blood pressure, blood tests to estimate hemoglobin, urine tests for albumin, sugar, iron and folic acid supplementation, and tetanus toxoid vaccination will provide under ANC services. In addition, ANC provide information about danger signs and complications and appropriate actions will be taken if any abnormality is detected and pregnant women will able to effectively access emergency care if the danger signs is recognized. The World Health Organization recommended four antenatal visits for pregnant women which would be adequate for safe pregnancies. Despite of this many advantages under ANC services many women are reluctant to access these maternal health services due to a number of socio-demographic and cultural reasons.

In Sumbuk village, it was found that various socio-demographic factors like maternal age, marital status, education, family income, occupation, family size and parity have major influence on utilization of antenatal care services. Their knowledge and awareness level on various aspects of ANC services were still poor. To enhance effective utilization of antenatal care services and to achieve the World Health Organization recommendation of four visits antenatal, there is a need to aware pregnant women and their family about importance of registering antenatal care services. The pregnant women can make aware about antenatal care services through various mediums of the mass media and by organizing maternal health awareness programme with the help of ANM and ASHA/Anganwadi workers. In addition, there is a need to educate pregnant mother about early detection of complications and to ensure them where to go in case of any complications arise during pregnancy. The pregnant mother and her family should know the importance of giving childbirth in a health facility. Further, in primary health care centers, all the medical facilities and equipment related to antenatal care services should be available. To improve health status of women, specific intervention program needs to conduct in order to improve maternal health practices. The policy makers should focus on various socio-economic factors that act as barriers for antenatal care services utilization and efforts should be made to address these factors in order to increase antenatal care utilization.

Limitations

Despite of giving maximum possible effort, the present study is not without limitations. First, our inability to collect data from recently delivered mother on the use of antenatal care services. Secondly, the data on utilization of antenatal care was assessed only in terms of modern medical facilities, while various traditional and home -based health practices which could be used as ANC services were not included.

Furthermore, the present study only focus on socio-demographic factors that act as barrier for the utilization of ANC services, whereas cultural and social determinants like decision- making with partners have not been included, which could have important implications in antenatal care utilization. In order to improve the generalizability of the findings, the research should not have been restricted to only socio-demographic factors. So, further research with better equipped methodology and longer duration will help to have a holistic understanding of the maternal health problems of the region. However, the present study is believed to make some positive contribution in better understanding of the reproductive health scenario in the rural parts of Sikkim, particularly in Sumbuk village, South Sikkim.

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APPENDIX

Photographs taken during the fieldwork

Primary Health Centre

Integrated Child Development Services