

A Literature Review on Emerging Factors Affecting Antenatal Care Utilization of Pregnant Women

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ABSTRACT Antenatal Care (ANC) is the care given to pregnant women so that they have a safe pregnancy and a healthy baby. It helps in the identification of early pregnancy complications and adverse pregnancy outcomes. The present paper is focused on the review of ANC services utilization and analyzes determinants that affect the utilization of ANC services. In this literature review, studies published in the years 2011-2021 were evaluated. For this purpose, electronic databases, i.e., Google Scholar, Science Direct, Scopus and PubMed, were explored to find English-language articles by using relevant keywords; moreover, the reference lists of the articles were searched. A systematic scoping review of studies focused on factors associated with the use of antenatal care services by pregnant women was done. In total, 30 relevant articles were included for review. The results exhibited that the late initiation and inadequate use of antenatal care services are associated with multiple variables, including demographic characteristics, socio-economic factors, literacy rate, accessibility, parity, decision-making power, mass-media, etc. The paper infers that optimum use of antenatal care cannot be achieved merely by establishing healthcare centers as various hurdles need to be addressed on the axis of socio-demographic, economic and education. Further, it suggests that the number of ANC visits can be enhanced by creating awareness among women regarding the significance of ANC services during their pregnancy.

Keywords: Antenatal care, Utilization of antenatal care, Significance of antenatal care, Factors affecting antenatal care, Pregnant women

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INTRODUCTION

ANC is the care which is provided by health professionals during pregnancy (Konje *et al.*, 2018). It provides regular health checkups, iron-folic acid tablets, vaccination, dietary information, and advice on pregnancy-related complications and interventions such as early detection of medical conditions like heart disease, diabetes mellitus, hypertensive disorders, HIV/AIDS, and anemia (Thapa *et al.*, 2016).

Between 2000 and 2017, the maternal mortality ratio (MMR, number of maternal deaths per 100,000 live births) dropped by about 38% worldwide (WHO, 2019). In India MMR has declined over the years from 130 in 2014-2016, 122 in 2015-17, 113 in 2016-18, and 103 in 2017-19. Whereas the target of Sustainable Development Goal 3 (SDG) is to reduce the MMR to 70 per 1, 00,000 live birth by 2030 (SRS, 2022).

One of the most important factor of MMR is poor utilization of ANC. In 2002, ANC utilization has increased by introducing WHO focused ANC (FANC), which recommended minimum 4 ANC visit that ensures adequate nutrition, vitamin intake, proper vaccination, exercise, and institutional delivery (Konlan *et al.*, 2020). WHO (2016), has issued new guidelines to lower the stillbirth, maternal mortality and morbidity rate and positive experience among pregnant women with a minimum of 8 antenatal visits, based on which the minimum recommended number of antenatal contacts has now been increased from 4 to 8. The first contact should be done in the first 12 weeks of gestation, with

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subsequent contacts taking place at 20, 26, 30, 34, 36, 38 and 40 weeks of gestation. The guideline focus on various aspect including nutritional interventions, maternal and fetal assessment, preventative measures, interventions for common physiological symptoms and health systems interventions to improve the utilization and quality of ANC.

Government have introduced various programmes such as Janani Suraksha Yojana (JSY), Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA), Surakshit Matritva Aashwashan (SUMAN), Labor Room & Maternity OT (LaQshya) etc.to improve maternal outcome. There are several gaps such as socio-demographic factors, education, parity, maternal age etc. that affect ANC attendance among women (Basha *et al.*, 2019). Since inadequate ANC is associated with worse pregnancy outcomes it is vital for health policymakers to better understand the factors influencing proper and prompt ANC usage. The present review was conducted to analyze various factors affecting ANC usage among pregnant women.

METHODOLOGY

Data Sources

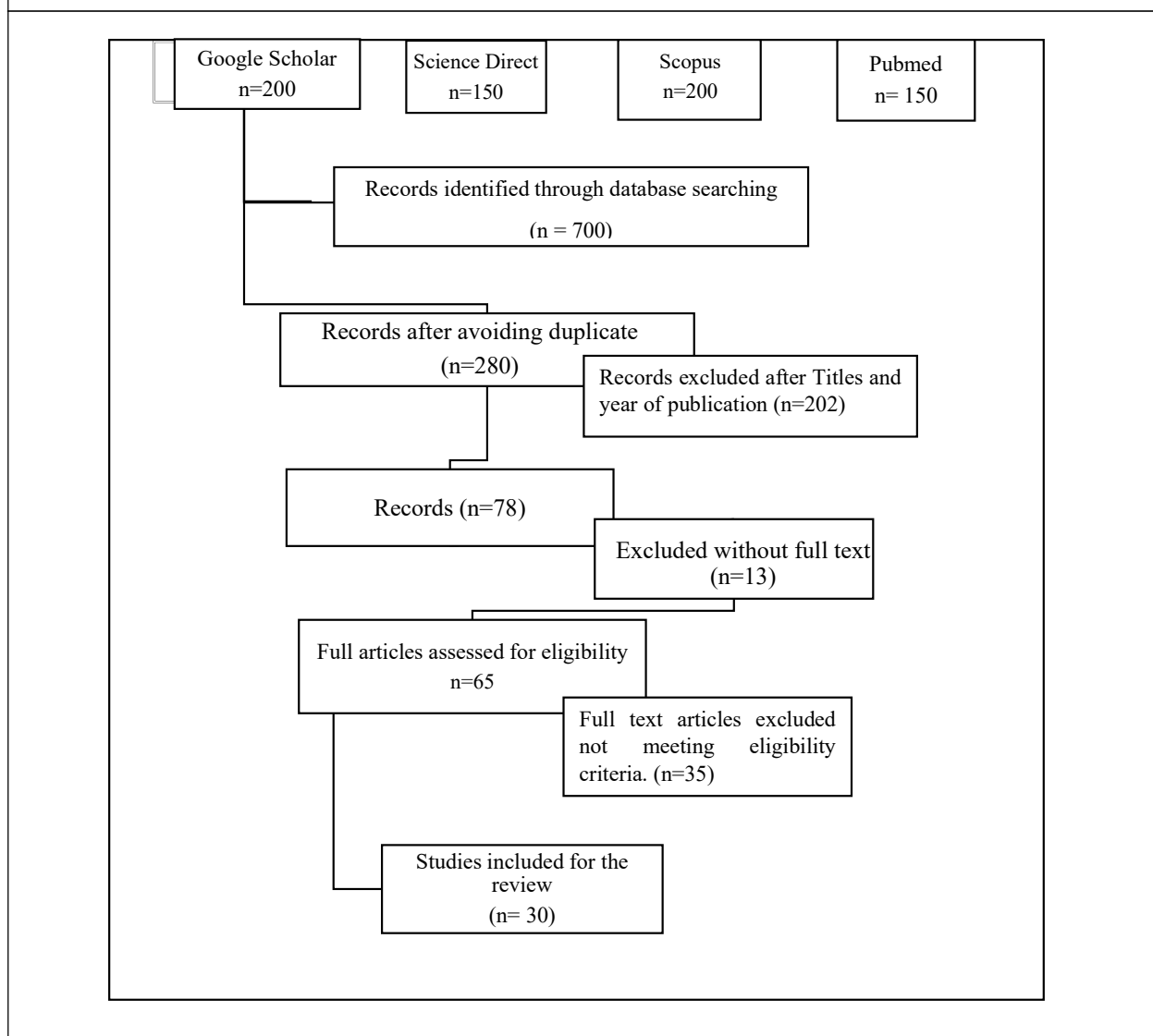
The literature search included Pubmed, Google Scholar, Scopus, and Science direct. The keywords employed for the search included “antenatal care”, “prenatal care”, “pregnant women”, “obstetric care”, “ANC factors”, “maternal health care”, “determinants factors”, “utilization”, and “utilization gap”.

Inclusion Criteria for the Selection of the Studies

We included journal articles of both quantitative and qualitative studies. Following points were kept in mind for inclusion of the studies:

- Studies focused on antenatal utilization of pregnant or recently delivered women.
- Studies reported factors affecting utilization of ANC. The

Figure 1: Flow Diagram of the Process of Identifying and Including References for the Systematic Review



Theme	Sub-Theme	Total Number of Studies	References
Socio-demographic factors	Maternal age	24	Regassa <i>et al.</i> , 2011; Agus and Horiuchi, 2012; Shahjahan <i>et al.</i> , 2012; Pandey and Karki, 2014; Rutaremwa <i>et al.</i> , 2015; Dahiru and Oche, 2015; Ali and Abdalla, 2016; Thapa <i>et al.</i> , 2016; Rurangirwa <i>et al.</i> , 2017; Agunwa <i>et al.</i> , 2017; Akowuah <i>et al.</i> , 2018; Konje <i>et al.</i> , 2018; Islam and Masud, 2018; Awasthi <i>et al.</i> , 2018; Pawar <i>et al.</i> , 2019; Basha, 2019; Obasohan <i>et al.</i> , 2019; Terefe and Gelaw, 2019; Manyeh <i>et al.</i> , 2020; Konlan <i>et al.</i> , 2020; Mouhoumed and Mehmet, 2021; Ekholuenetale <i>et al.</i> , 2021; Torres <i>et al.</i> , 2021; and Hassen <i>et al.</i> , 2021
	Maternal education	23	Agus and Horiouchi, 2012; Pandey and Karki, 2014; Dhairu and Oche, 2015; Rutaremwa <i>et al.</i> , 2015; Ali and Abdalla, 2016; Thapa <i>et al.</i> , 2016; Rurangirwa <i>et al.</i> , 2017; Agunwa <i>et al.</i> , 2017; Islam and Masud 2018; Akowuah <i>et al.</i> , 2018; Konje <i>et al.</i> , 2018; Awasthi <i>et al.</i> , 2018; Chopra <i>et al.</i> , 2019; Terefe and Gelaw, 2019; Obasohan 2019; Basa <i>et al.</i> , 2019; Pawar <i>et al.</i> , 2019; Manyah <i>et al.</i> , 2020; Konlan <i>et al.</i> , 2020; Ahmed and Husein, 2020; Ekholuenetale <i>et al.</i> , 2021; Torres <i>et al.</i> , 2021; and Hassen <i>et al.</i> , 2021
	Parity	14	Regassa <i>et al.</i> , 2011; Agus and Horiuchi, 2012; Shahjahan <i>et al.</i> , 2012; Pandey and Karki, 2014; Dhairu and Oche, 2015; Rutaremwa <i>et al.</i> , 2015; Thapa <i>et al.</i> , 2016; Agunwa <i>et al.</i> , 2017; Islam and Masud, 2018; Awasthi <i>et al.</i> , 2018; Obasohan <i>et al.</i> , 2019, Konlan <i>et al.</i> , 2020; Mouhoumed and Mehmet, 2021; and Torres <i>et al.</i> , 2021
	Type of Family	4	Pandey and Karki, 2014; Akowuah <i>et al.</i> , 2018; Awasthi <i>et al.</i> , 2018; and Pawar <i>et al.</i> , 2019
Affordability	Socio-economic status	14	Agus and Horiuchi, 2012; Shahjahan <i>et al.</i> , 2012; Pandey and Karki, 2014; Dhairu and Oche, 2015; Vidler <i>et al.</i> , 2016; Rurangirwa <i>et al.</i> , 2017; Konje <i>et al.</i> , 2018 Akowuah <i>et al.</i> , 2018; Islam and Masud, 2018; Pawar <i>et al.</i> , 2019; Manyeh <i>et al.</i> , 2020; Ahmed & Husein, 2020; Hassen <i>et al.</i> , 2021; and Ekholuenetal <i>et al.</i> , 2021
	Women occupation/Husband Occupation	9	Pandey and Karki, 2014; Dhairu and Oche, 2015; Ali and Abdalla, 2016; Thapa <i>et al.</i> , 2016; Agunwa <i>et al.</i> , 2017; Rurangirwa <i>et al.</i> , 2017; Akowuah <i>et al.</i> , 2018; Obasohan <i>et al.</i> , 2019; and Konlan <i>et al.</i> , 2020
Accessibility	Place of residence	5	Dhairu and Oche, 2015; Islam and Masood 2018; Obasohan <i>et al.</i> , 2019; Ekholuenetale <i>et al.</i> , 2021; and Torres <i>et al.</i> , 2021
	Distance from health facility	10	Regassa <i>et al.</i> , 2011; Ali and Abdalla, 2016; Nyathi <i>et al.</i> , 2017; Konje <i>et al.</i> , 2018; Akowuah <i>et al.</i> , 2018; Terefe and Gelaw, 2019; Hwang and Park, 2019; Ahmed and Husein, 2020; Konlan <i>et al.</i> , 2020; and Hassen <i>et al.</i> , 2021
	Transportation	6	Shahjahan <i>et al.</i> , 2012; Ali and Abdalla, 2016; Vidler <i>et al.</i> , 2016; Nyathi <i>et al.</i> , 2017; Awasthi <i>et al.</i> , 2018; and Hwang and Park, 2019
	Media exposure	5	Shahjahan <i>et al.</i> , 2012; Regassa <i>et al.</i> , 2012; Pandey and Karki, 2015; Konlan <i>et al.</i> , 2020; and Hassen <i>et al.</i> , 2021
Women's status in the household	Women autonomy	6	Regassa <i>et al.</i> , 2011; Dhairu and Oche, 2015; Vidler <i>et al.</i> , 2016; Thapa <i>et al.</i> , 2016; Obasohan <i>et al.</i> , 2019; and Shah <i>et al.</i> , 2021

factors are characteristics that affect maternal outcome (number of antenatal visit, time of registration, institutional delivery). It may increase or decrease the likelihood of antenatal care usage.

- Studies published after 2011 were considered.
- Only English-language full-text articles were included.

Study Selection

A flowchart describing the study selection procedure is presented in (Figure 1).The preliminary search produced 700 citations of which 280 remained after exclusion of duplicate, 202 were excluded after screening. 78 articles were examined and 13 were excluded without full text. 65 full-text articles were assessed and 35 articles were excluded for the following reasons: review articles, studies having different target population and not reported target outcome. 30 relevant studies were included for review literature.

Identification of Themes and Subthemes for Review

After the analysis of selected articles four major themes identified were socio-demographic, affordability, accessibility and the status of women in the household. Eight sub-themes as key determinants in affecting ANC utilization in studies were included for depth analysis (Table 1).

RESULTS AND DISCUSSION

Socio-Demographic Factors

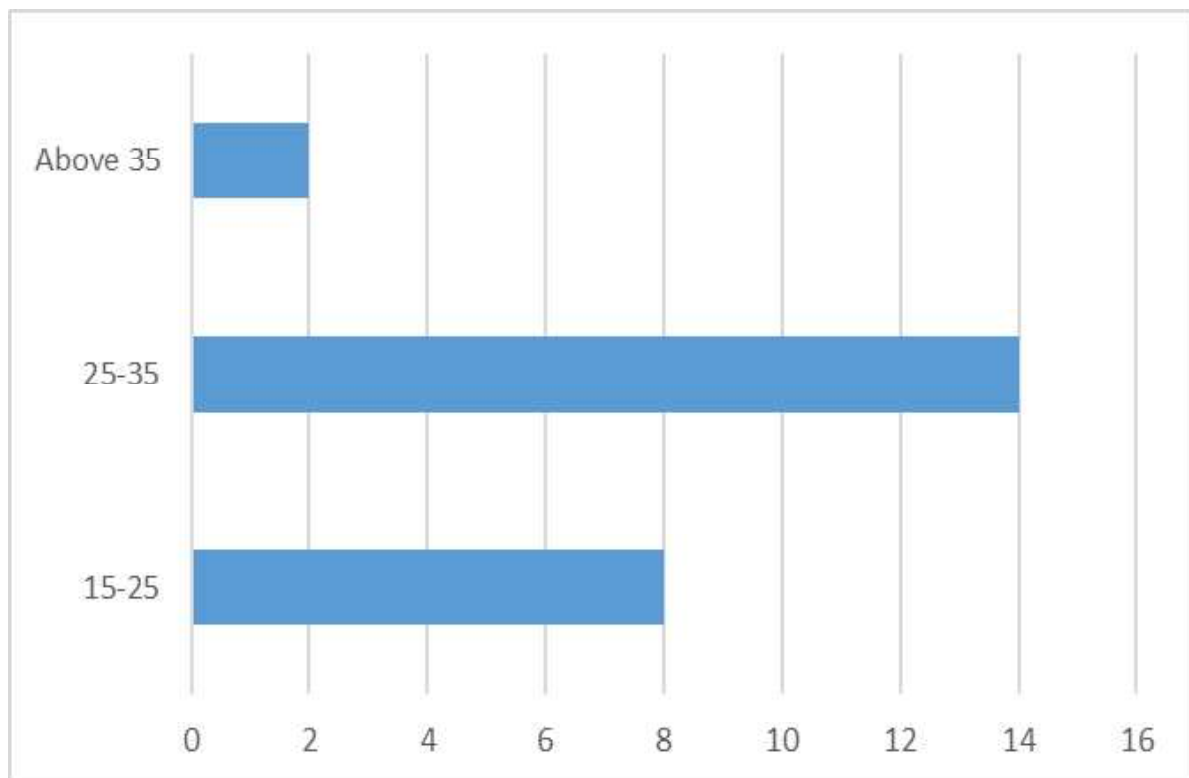
Maternal Age

In the literature review, 24 studies documented that the age of mothers was significantly associated with the utilization rate of ANC services (Figure 2). Larger chunks of younger women in the age group of 15-25 and 25-35 were utilizing ANC services. Fourteen studies documented that women of 25-35 years of age had a positive effect on antenatal care attendance (Agus and Horiuchi, 2012; Shahjahan *et al.*, 2012; Pandey and Karki, 2014; Rutaremwa *et al.*, 2015; Ali and Abdalla, 2016; Thapa *et al.*, 2016; Islam and Masud, 2018; Basha, 2019; Obasohan *et al.*, 2019; Terefe and Gelaw, 2019; Konlan *et al.*, 2020; Mouhoumed and Mehmet, 2021; Ekholuenetale *et al.*, 2021; and Torres *et al.*, 2021).

Whereas, In eight studies women in the age group of 15-25 were more likely to have ANC services than women above 25 years of age (Regassa *et al.*, 2011; Dahiru and Oche, 2015; Rurangirwa *et al.*, 2017; Konje *et al.*, 2018; Awasthi *et al.*, 2018; Pawar *et al.*, 2019; Manyeh *et al.*, 2020; and Hassen *et al.*, 2021).

The utilization of ANC services in women above 35 years of age was observed in only two studies. The reason for the low utilization of ANC services among older women could be

Figure 2: Relationship Between Age Group and Utilization of ANC Services



their enriched experience and knowledge accumulated from previous pregnancies and births. Moreover, they believed that the possibilities of complicated labour and pregnancies are higher in younger women with the first pregnancy (Agunwa *et al.*, 2017; and Akowuah *et al.*, 2018).

Education

Education emerged as a significant factor that influences antenatal care services utilization among pregnant women. In fourteen studies, a higher concentration of ANC services utilization was found among women who were educated up to graduation level followed by secondary education and primary education respectively. Not availing antenatal check-ups was seen only in women belonging to low education status (Agus and Horiuchi, 2012; Pandey and Karki, 2014; Dhairu and Oche, 2015; Rutaremwa. *et al.*, 2015; Ali and Abdalla, 2016; Thapa *et al.*, 2016; Rurangirwa *et al.*, 2017; Agunwa *et al.*, 2017; Islam and Masud 2018; Chopra *et al.*, 2019; Terefe and Gelaw, 2019; Ahmed and Husein, 2020; Hassen *et al.*, 2021; and Ekholuenetale *et al.*, 2021).

Six studies reflected that women with secondary education were more likely to receive antenatal care than women with no education. As compared to those with higher education, women with lower education were more likely to attend irregular ANC services (Obasohan 2019; Basha *et al.*, 2019; Pawar *et al.*, 2019; Manyah *et al.* 2020; Konlan *et al.*, 2020; and Torres *et al.*, 2021). In three studies women who were educated up to the primary level or had some education were more likely to use maternity care services in comparison to those women who had no education (Akowuah *et al.*, 2018; Konje *et al.*, 2018; and Awasthi *et al.*, 2018).

This finding highlighted the significance of women's education for improvement in utilization of maternity care services. Educated women have access to better health care services and awareness of the consequences of not availing maternal health care services (Dhairu and Oche, 2015).

Parity

The parity of women is a substantial aspect of antenatal care attendance. Literature review demonstrated that fourteen studies have observed the role of parity in influencing ANC attendance among women. Eight studies provided evidence that low parity recorded more antenatal care attendance. Older and high parity women were found to be less utilizing ANC services. As the number of children, a woman has increased, utilization of optimal level ANC services becomes less likely. The potential reason for less utilization in older women is that they tend to develop confidence from previous pregnancies and birth. Furthermore, they have a misconception that complications and difficulties occur more in the first pregnancy (Regassa *et al.*, 2011; Agus and Honiruchi,

2012; Shahjahan *et al.*, 2012; Agunwa *et al.*, 2017; Obasohan *et al.*, 2019, Konlan *et al.*, 2020; Pandey and Karki, 2014; and Islam and Masud, 2018).

However, multiparous women were attending more ANC services compared to low parity women in three studies (Rutaremwa *et al.*, 2015; Awasthi *et al.*, 2018; and Mouhoumed and Mehmet, 2021). Contrary to these studies, there was no association between Parity and ANC services utilisation observed in three studies (Dhairu and Oche, 2015; Thapa *et al.*, 2016; and Torres *et al.*, 2021).

3.1.4 Type of Family: There is a key association between the type of family and the attendance of ANC services. Four or more ANC visits were recorded among women of joint families (Pandey and Karki, 2014; Akowuah *et al.*, 2018; and Pawar *et al.*, 2019). On the contrary, Awasthi *et al.* (2018) reported that the majority of women living in nuclear families had more ANC.

In nuclear families, besides the husband, there is a lack of other family members that can accompany and help pregnant women in needy situations. Whereas in joint families, many members are available to accompany at the health facility. Moreover, elderly experienced people can influence pregnant women in seeking ANC at the right time (Akowuah *et al.*, 2018; and Pawar *et al.*, 2019).

Affordability

Twenty-one studies found significant relationships between economic factors (socio-economic status/income of the household, occupation of women and husband and ANC utilization. These factors have been discussed in a detailed manner as follows:

Socio-Economics Status (SES)

SES is one of the enabling factors reported to influence ANC utilization. Most of the studies have shown a positive association between socio-economic status and the utilization of ANC as high SES improved the uptake of at least one and at least four ANC visits and the early commencement of ANC (Agus and Horiuchi, 2012; Shahjahan *et al.*, 2012; Pandey and Karki, 2014; Dhairu and Oche, 2015; Vidler *et al.*, 2016; Rurangirwa *et al.*, 2017; Akowuah *et al.*, 2018; Islam and Masud, 2018; Pawar *et al.*, 2019; Manyeh *et al.*, 2020; Ahmed and Husein, 2020; and Hassen *et al.*, 2021).

A qualitative study in India highlighted that poverty is a recognized determinant of healthcare utilization and women of low-wealth status may be unable to afford the medical and non-medical costs associated with using ANC (Konje *et al.*, 2018). Similarly, a study of Ghana conducted by Ekholuenetale *et al.* (2021) concluded that mothers from wealthier households were more likely to attend ANC services

compared to those from poorer households, and this association was stronger in those who attended eight or more ANC visits.

Occupational Status of Women

Occupational status deploys a pivotal force for pregnant women in utilizing maternal services including ANC. A significant difference in the utilization of ANC services was observed among the working women, agricultural workers, and labourers. Women who were engaged in agriculture and daily earner or labour had a low rate of ANC attendance in comparison to women working as civil servants (Pandey and Karki, 2014; Dhairu and Oche, 2015; Ali and Abdalla, 2016; Thapa *et al.*, 2016; Agunwa *et al.*, 2017; Rurangirwa *et al.*, 2017; Akowuah *et al.*, 2018; and Konlan *et al.*, 2020).

The occupational status of the husband is also recorded as a key predictor in optimum ANC attendance among women. Increased utilization of institutional delivery services, use of family planning and immunization services was directly correlated to the husband's working status (Pandey and Karki, 2014; Dhairu and Oche, 2015; Agunwa *et al.*, 2017; Rurangirwa *et al.*, 2017; and Obasohan *et al.*, 2019).

Accessibility

Twenty-three studies have found that ANC use is influenced by the accessibility of the services mainly a place of residence, distance, transport and mass media to the healthcare facilities:

Place of Residence

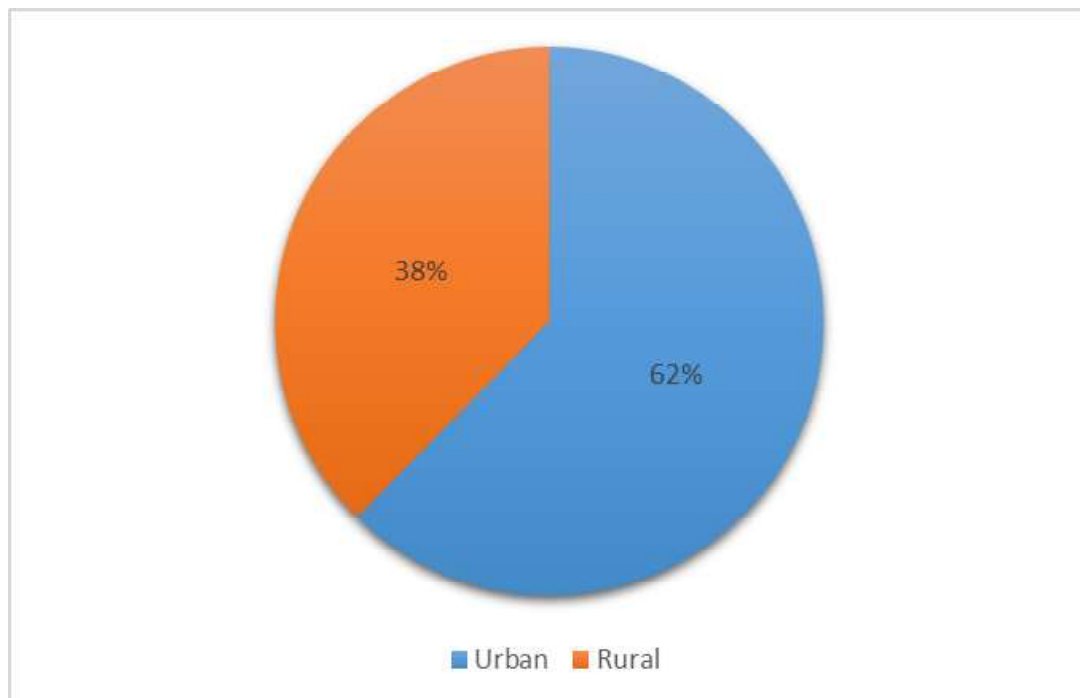
Place of residence was a statistically significant factor in uptake of ANC services (Figure 3). A total of 5 studies (n = 72804) reported that women living in rural areas were found to be less likely to use ANC services (38%) compared to women living in urban areas (62%) (Dhairu and Oche, 2015; Islam and Masood 2018; Obasohan *et al.*, 2019; Torres *et al.*, 2021; and Ekholuenetale *et al.*, 2021).

Less utilization among women living in rural settings was due to their inaccessibility, financial problems, distance and traveling time to attend health facilities, and lack of skilled personnel at health facilities (Dhairu and Oche, 2015).

Distance

Distance to the health facility significantly determined both the chance and frequency of attending health facilities. These determinations are logical with several studies also confirming that vast distance to the health facility is inversely associated with ANC utilization. Accessibility to health services is hindered by the distance and transportation problems of the people, especially in rural areas. It is exhausting for women to go through a long-distance walk to reach health centers thus recorded less utilization of ANC by women (Regassa *et al.*, 2011; Ali and Abdalla, 2016; Nyathi *et al.*, 2017; Konje *et al.*, 2018; Akowuah *et al.*, 2018; Terefe and Gelaw, 2019; Hwang and Park, 2019; Ahmed and Husein, 2020; Konlan *et al.*, 2020; and Hassen *et al.*, 2021).

Figure 3: ANC Utilization amongst Rural and Urban Women



Transportation

Transportation facilities make accessibility to health care more problematic for people residing in remote areas. This situation forces rural women to go to traditional birth attendant for availing antenatal care services within their communities (Awasthi *et al.*, 2018). The observations are similar to other studies where the majority of women complained that travel conditions made it inconvenient for them to visit the health facilities and they found traveling expensive. Pregnant women who lived far from the ANC had the lowest rate of ANC visits (Shahjahan *et al.*, 2012; Ali and Abdalla, 2016; Nyathi *et al.*, 2017; and Hwang and Park, 2019).

The price of private transport varies depending on the mode, time of day, and distance. A study in India highlighted that free ambulance services were available for transportation for people below the poverty line and were unable to access health centers at the community level (Vidler *et al.*, 2016).

Media Exposure

Mass media have become an important tool in persuading people to avail health services and also update them with valuable information. Exposure to mass media such as newspapers, television, and radio had a significant positive effect on the use of ANC services. Radio listening frequency is found to be a key variable for ANC service utilization (Shahjahan *et al.*, 2012). Similarly, Regassa *et al.* (2011) observed that in mass media, women who used to listen to radio once a fortnight are more likely to utilize ANC services compared to those women who were not listening to the radio at all are less likely to use the services respectively.

Accessibility to mass media tools can create a positive impact on women's inclination for an early visit and their adherence to sequential follow-ups (Pandey and Karki, 2014; Konlan *et al.*, 2020; and Hassen *et al.*, 2021).

Women's status in Household

The status of women in families is determined by their freedom to make decisions for themselves. In the literature review, the autonomy of women emerged as a crucial factor to enhance ANC utilization. Detailed analysis is given below:

Women Autonomy

Autonomy of women can be defined as, "the capacity and freedom of women to act independently, the ability of women to make and execute independent decisions pertaining to personal matters of importance to their lives and their families, and the capacity of women to make decisions" (Thapa *et al.*, 2016).

Many studies that investigated ANC utilization factors revealed that involvement in decision-making on major household decisions is one of the enabling factors that exerted a positive

effect on attaining adequate and timely ANC visits. Women with more autonomy are significantly more likely to complete at least 4 ANC services than those women with low autonomy (Regassa *et al.*, 2011; Vidler *et al.*, 2016; Obassohan *et al.*, 2019; and Shah *et al.*, 2021).

The joint decision between the wife and husband predicts positive use of antenatal care and skilled delivery compared to husband-only (Dhairu and Oche, 2015). Vidler *et al.* (2016) explained the factors contributing to the low ANC utilization that women have limited autonomy in taking decisions related to their health. The majority were reluctant to go for ANC services without accompanying their husbands or in-laws. Elderly people do not allow to go to the hospital for institutional delivery as they perceive it as a waste of money. They insist on home delivery as they themselves delivered at home.

CONCLUSION

The paper indicates that utilization of ANC is associated with various determinants such as women's age, educational status, parity, women's autonomy, occupational status, place of residence and media exposure, etc. The findings of this review demonstrated the need for the improvement of knowledge of pregnant women on ANC, accessibility to antenatal care services, and local transport to facilitate pregnant women to seek antenatal care services.

There is an urgent need to increase uptake of ANC services, examinations, immunization, and institutional delivery, essential newborn care for the better and healthy outcomes of pregnancy. Despite government's various efforts, there are several hindrances that affect the utilization rate of ANC services among women. Government should make efforts for addressing these ANC barriers on grass root level. The review emphasized the need for awareness programs for antenatal mothers on content and utilization of proper ANC. Health promotion and educational programmes at community level may help pregnant women to be aware of adequate ANC for their pregnancy. Health workers as the main ANC providers, should be aware of potential barriers to utilization. They should be trained to be sensitive to women's socio-economic status and environmental conditions.

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