A Cross-sectional Survey of the determinants of Maternal Health Services Utilization among Women with Disability in Mbale District, Uganda.

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Abstract

Background:

The study aimed to evaluate the determinants of maternal health services utilization among women with disability (WWD) in the Mbale district in Uganda.

Methodology:

The study approach was a mixed qualitative and quantitative cross-sectional design. The selection of study participants was by snowballing for the quantitative tool and purposively sampling for the Key Informants. A sample size of 189 women with disabilities was used in the study and 8 key informants were interviewed. Data analysis was carried out using the Statistical Package for Social Sciences (SPSS) version 22, and qualitative data were subjected to thematic analysis.

Findings:

The proportion of WWD utilizing MHS was found to be low in the Mbale district with only 17.7% attending four or more antenatal visits. Fear of stigma was the main barrier to the utilization of maternal health services. Health education influenced the utilization of maternal health services. Utilization of maternal health services (MHS) among women with disabilities was associated with socio-economic determinants (secondary level education, spousal support, monthly income). Finally, there was a significant association between accessibility and the utilization of MHS.

Conclusion:

This study revealed that external factors form the main barriers to the utilization of maternal health services among women with disability.

Recommendations:

Training and equipping health facility staff to be more sensitive to and attend to the unique needs of WWD could improve the experiences of WWD seeking MHS at the health facility. This may reduce their fear of stigmatization thus improving service utilization.

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1. Background

In Sub-Saharan Africa, maternal mortality currently stands at 546 maternal deaths per 100,000 live births (Alkema *et al.,* 2016), consequently, many Sub-Saharan African countries have a steep road to scale toward achieving target 3.1 of the Sustainable Development Goals. Women with disabilities face more challenges in accessing maternal healthcare(Matin *et al.,* 2021). They are particularly vulnerable to deficiencies in health-

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care services depending on disability type and setting. Services have been structured to meet the needs of able-bodied women, neglecting the special maternity care needs of women with disabilities (WWD) (Devkota *et al.,* 2018). This inadvertently multiplies the barriers experienced by this marginalized category of women and makes them more susceptible to maternal- and newborn-related morbidity (Ganle *et al.,* 2016).

The social model theory says that people are disabled by barriers in society, not by their impairment or difference. Disability is commonly viewed as a problem that exists in a person's body and requires medical treatment. The social model of disability, by contrast, identifies disability as a disadvantage that stems from a lack of fit between a body and its social environment(Goering, 2015). Barriers that magnify one's disability may be physical or they can be caused by people's attitudes to difference; in several instances, people are disabled by prejudice, labeling, ignorance, lack of financial independence, and not having information in formats that are accessible to them.

Many of these factors emerged as determinants of maternal health utilization among women with disability in this study.The study on the utilization of maternal health care services among disabled people is key to improvement in their health and ultimately their quality of life. The knowledge acquired from this study would deepen the understanding of the pattern of demand and utilization of maternal health care services among women living with disability in the Mbale district in Uganda.

2. METHODS

Study design

The study adopted an analytical cross-sectional study design employing both qualitative and quantitative approaches to data collection.

Study setting

This study was conducted in Mbale District, a district in Eastern Uganda. The largest city in the district, Mbale, also serves as the main administrative and commercial center in the sub-region. The interest in this area was developed after realizing the difficulties of women with disabilities in accessing health care services and noting the unfavorable terrain, especially to the poor rural women with disabilities, and the limited study on disabilities done in the district.

Study Participants

Study population

This study population consisted of females of the reproductive age 18-49 who could provide information in relation to accessibility and utilization of maternal health services particularly, among them antenatal care services, delivery, and postnatal care services.

Inclusion criteria: women with moving disability, seeing disability, hearing/speech disability who had delivered babies in the two years preceding the study.

Exclusion criteria: women who were not able to provide consent and those who are critically ill.

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Exclusion criteria: women who were not able to provide consent and those who are critically ill.

Sample size determination. The study sample was determined using the Leslie Kish sampling formula (Tumuhamye et al., 2013) for Cross-sectional studies:

$n = z^2 \times p\ (1-p)$

d^2

Where, n = the desired sample size

z = the standard normal value corresponding to the required level of confidence (95%) = 1.96

p = the proportion of women with disability living in who accessed ANC services from skilled birth attendants, 86.9% of women living with disabilities had ANC from skilled attendants (UDHS, 2016).

d = the desired precision of the estimate % (0.05)

$n = 1.96^2 \times 0.869\ (1-0.869)/05^2 = 174.92956$

Plus 10% for non-response: 175+17 = 192

Therefore, the sample size of respondents was 192 women with disability

Selection of study participants

The study utilized non-probability sampling procedures for the selection of the participants for the quantitative tool and purposive sampling for the Key Informants.

Participants were sampled using snowballing the first participant was identified with the help of the leader of WWD in the district, thereafter the woman directed the researcher to the next colleague who met the inclusion criteria, who also led the researcher to the next until the required sample size was obtained.

Purposive sampling was used to select participants in the key informants' interviews based on the understanding that they have adequate knowledge of the subject matter (Palinkas et al., 2015). The key informants included the health staff particularly midwives who provided maternal health services to WWDs and the leaders of WWDs. Recruitment of study participants commenced on 22nd November 2020 and actual interviewing of study participants was conducted between the first and second weeks of January 2021.

Variables

Dependent variable

The outcome variable was maternal health services utilization on a binary scale: yes or no. Participants who reported they utilized ANC during their last pregnancy, were delivered from a health facility and attended postnatal services were considered to have utilized maternal health services.

Independent variable

The independent variables of the study were as follows:

1. Socio-demographic determinants that include age, parity, birth order, religion, education level, and marital status. Socio-economic determinants include income level, wealth index, social support and stigmatization, partner support, lack of information on the available services, and cost of service.

2. The accessibility determinants included: physical accessibility such as place of residence, distance to the health facility, difficulty finding transport, and suitability of the transport/road; and institutional accessibility such as availability of wheelchairs and ramp, availability of walking stick, availability of interpreters, and availability of health education material.

Data collection methods and tools

Both quantitative (semi-structured questionnaire) and qualitative KIIs) data collection methods were used and are described below:

Researcher administered questionnaire

Data in this study were collected using an interviewer-administered semi-structured questionnaire. The questionnaires were administered to respondents with hearing disabilities with the help of an interpreter. This method of questionnaire administration was selected to limit the non-response rate.

Key Informants Interviews (KII)

Face-to-face interviews were conducted with eight key informants which included six health staff and two WWD leaders. The health workers were from six health facilities while the WWD leaders were from the district office of the National Union of Disabled Persons Uganda and an-

other at the training center for the deaf using a structured KII guide containing open-ended questions that sought to find out the opinions of the KII regarding the issue under study.

Validity of the data collection tool

Of the available forms of validity, the content validity of the questionnaire was tested. The Content validity of the tool was tested first, among other quality control measures because the next steps of quality control (training of assistants and pretesting) had to be done using a valid tool. In measuring the validity of the tool, the content validity index was calculated, from the evaluation of four independent judges who gave the final feedback using a rating scale as follows: 4 for a very relevant item, 3 for a relevant item, 2 for a somewhat relevant item, and 1 for a non-relevant item. Each of them was given the objectives of the study and a summary of the methods that were used in the study so that their item ratings were well informed. The first judge rated 27 of the 31 items as very relevant and relevant, the second rated 28, the third rated 29 and the fourth rated 29 as well. Therefore, the number of items rated 3 or 4 was $(27 + 28 + 29 + 29 / 4) = 28.25$. Therefore, the CVI (0.911) was acceptable as it was within the range 0.7-0.9 (Shi, Mo, and Sun, 2012).

Pretest

From the pilot study which was done in the Sironko district involving a total of 5 women with disabilities, three questions were rephrased to bring out the concern the researcher needed.

Bias

The most appropriate method of contacting and selecting study participants in this study was through the union of people with disability and snowballing.

The authors however acknowledge that such sampling techniques may present a risk of bias. The researchers made sure to include women with various types of disabilities (hearing, sight, and walking) to avoid selection bias.

Statistical methods

Data were entered into the Statistical Package for Social Sciences (SPSS) software. Applying the SPSS Package, the analytical technique included univariate descriptive frequency distributions; and binary logistic regression models as explained below. A compilation of all the responses from the data collection tools was entered in SPSS software version 22 for analysis and measurements of access to and utilization of maternal health services.

Univariate analysis

Data on respondents' socio-economic determinants and accessibility determinants were tabulated and frequency tables were generated to assess the statistical distribution followed by the study population.

Bivariate analysis

Cross tabulations as a standard measure for two categorical variables under measure were made between utilization of maternal health services on each respondent's socio-economic determinants and accessibility determinants. All probability values $P < 0.05$ were considered significant and therefore regarded as actual factors influencing the utilization of maternal health services among women with disabilities.

Multivariate analysis

All the significant factors assessed to influence the utilization of maternal health services ($P< 0.05$) at the bivariate level were further assessed in relation to the utilization of maternal health services using a multinomial regression equation. The factor with the highest regression coefficient was considered to have the highest influence on the utilization of maternal health services as defined by the odds ratio.

3. RESULTS

Participants

During the period of data collection, 189 out of the 192 sample size WWD were interviewed, and the results are presented according to the study objectives. There was a 98.4% response rate. The table below provides information mainly socio-demographic descriptive data relating to the study participants.

Details of the dates of recruitment of study participants have been included in this section.

3.1.

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Selection of study participants. The study utilized non-probability sampling procedures for the selection of the participants for the quantitative tool and purposive sampling for the Key Informants. Participants were sampled using snowballing the first participant was identified with the help of leader of WWD in the district, there after the woman directed the researcher to the next colleague who met the inclusion criteria, who also led the researcher to the next until the required sample size was obtained.

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1. Socio – demographic determinants that include age, parity, birth order, religion, education level, marital status. Socio-economic determinants that include income level, wealth index, social support and stigmatization, partner support, and lack of information on the available services, cost of service.

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Socio-economic determinants of facility based maternal health services utilization among WWD in Mbale district.. Bivariate analysis revealed that socio-economic determinants were significantly associated with the utilization of maternal health services among women with disability in Mbale. Respondents aged 30-39 years were less likely to utilize maternal health services compared to those who were aged 20-29 years (COR: .383, 95% CI: .162-.904). Marital status was significantly associated with utilization of maternal health services; widowed women were less likely to utilize maternal health services compared to single ones (COR:.231, % CI: .060-.885). Having secondary education was significantly associated with increased utilization of maternal health services (COR: 1.193 95% CI: 1.050-2.745). Earning a monthly income of 30,000-80,000 shillings was associated with increased chances of the utilization of maternal health services (COR: 1.46995,

Table 1: **Descriptive Data**

Variables	Frequency (n=189)	Percentage %
Nature of the disability	159	84.1
Physical disability	13	6.9
Blindness Hearing/speech impairment	17	9.0
Age of the respondents	82	43.4
20-29 years	87	46.0
30-39 years	20	10.6
40-49 years		
Number of pregnancies irrespective of the outcome		
One	94	49.7
Two	58	30.7
Three	23	12.2
Four and above	14	7.4
Marital status		
Single	49	25.9
Married/cohabiting	62	32.8
Divorced/Separated	35	18.5
Widowed	43	22.8
Current level of education	41	21.7
No formal education at all	62	32.8
Primary education	33	17.5
Secondary education	53	28.0
Above secondary education		
Average monthly income estimate		
<30,000 shillings	60	31.7
30,000-80,000 shillings	56	29.6
80,001-120,000 shillings	34	18.0
>120,000 shillings	39	20.6

% CI: 1.174-14.266). Spousal support was significantly associated with the utilization of maternal health services (COR: 5.808, 95% CI: 1.579-21.363).

Accessibility of maternal health services

MHS: Maternal Health Services; WWD: Women with Disabilities

Regarding physical accessibility of the health services study participants expressed difficulty in finding transportation to the health facility. Only 30% of respondents were always assured of transport and the majority 110(58.2%) noted that the available means were not suitable, Regarding physical accessibility of services within the health facilities, 99(52.4%) noted that the health facilities do not have wheelchairs for WWD, 104(55.0%) said the health facilities do not have designed walkway/ramp, 109(57.7%) said the health facilities they visit do not have a walking stick for the physical disability, 10%(55.0%). Bivariate analysis revealed that distance to the health facility was significantly associated with utilization of maternal health services; living beyond 5km was associated with reduced utilization

of maternal health services (COR: .348, 95% CI: .044-.769, p-0.019). The diagram below shows that almost 90% of the respondents perceived accessing transport to the health facility as being difficult or very difficult.

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Although the majority of respondents (92%) reported having received MHS health education at the facility only 42% of those had translators to help them. Those with hearing and sight disabilities expressed difficulty in understanding and expressing themselves through interpreters/ translators. The health facility staff equally found challenges communicating with these mothers. Receiving health education was associated with the utilization of maternal health services, and not receiving health education was associated with decreased utilization of maternal health services (COR: .244 95% CI: .127-.851, p-0.004).

Utilization of Maternal Health Services

The majority of the respondents (81%) reported having utilized maternal health services in their last pregnancy. However deeper analysis of their MHS utilization patterns proved interesting.

From the chart below it is evident that of the respondents who utilized maternal health services majority (74.6%) utilized ANC and postnatal care, but fewer (68.8%) mothers chose to deliver at a health facility.

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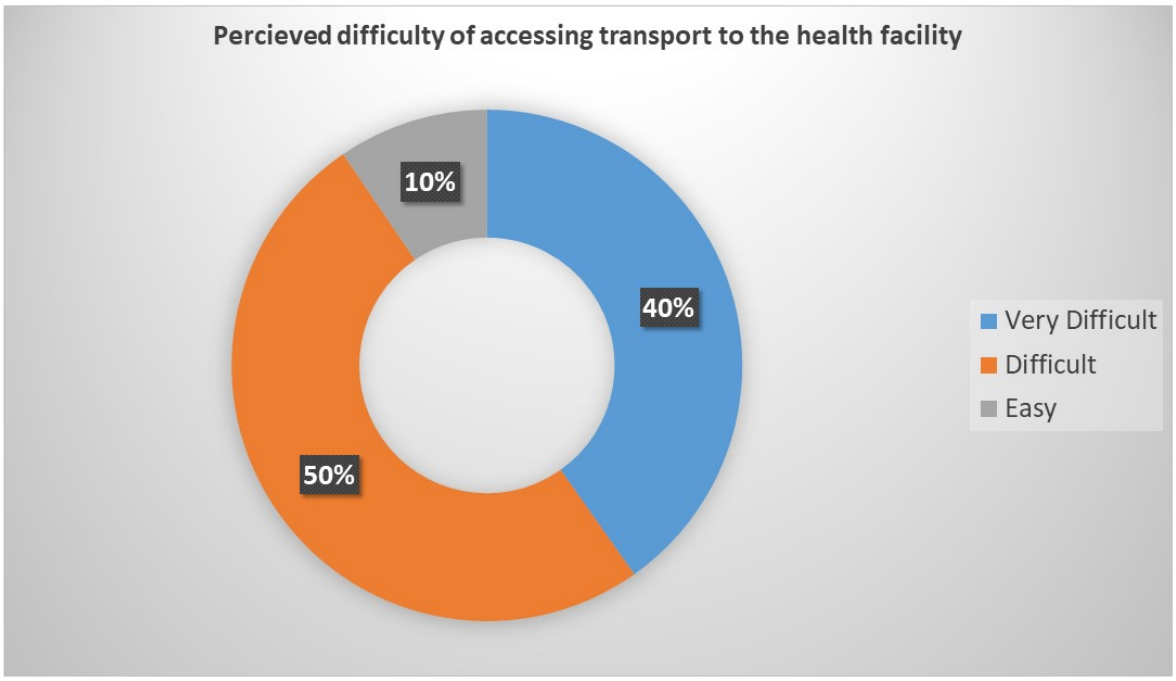

Chart 1: Perceptions of difficulty accessing transportation to the health facility

From the chart below it is evident that of the respondents who utilized maternal health services majority (74.6%) utilized ANC and post-natal care, but fewer (68.8%) mothers chose to deliver at a health facility.

Most 154 (81.5%) of the respondents had attended at least one of the ANC visits. However, as can be seen in the chart below majority (82.3%) had attended less than 4 ANC visits.

As can be seen below fear of stigma seemed to be the biggest barrier to utilization of maternal health services.

The findings found to have statistical significance as bivariate analysis were further analyzed and the table below provides a summary of the significant associations emerging from multivariate analysis.

Participants who were aged over 30yrs years were less likely to utilize maternal health services compared to those who were aged 20-29 years (Adjusted OR: 0.094 95% CI:013-.663, p-value-0.018) and (Adjusted OR: 0.113, 95% CI: .015-.846, p-value-0.034) respectively. Participants who were separated/divorced were more likely to utilize maternal health services compared to those who were single (Adjusted OR: 88.603, 95% CI: 6.722-116.912, p-value- 0.001). Education level was seen to influence MHS services utilization. Participants who had a secondary level of education were more likely to utilize maternal health services compared to those who had no formal education (Adjusted OR: 5.092, 95% CI: 2.002-8.959p-value-0.046). Similarly having a monthly income was associated with increased use of MHS. Participants who had an average monthly income of 30,000-80,000 shillings were more likely to utilize maternal health services compared to those who had an average monthly income of fewer than 30,000 shillings (Adjusted OR: 2.083, 95% CI: 1.012-4.553, p-value-0.010).

Qualitative findings.

Qualitative data were obtained from interviews held with the midwives at the health facility in the Mbale district and the women with disability leaders in the district and from the training center of the deaf in Mbale as key informants. The

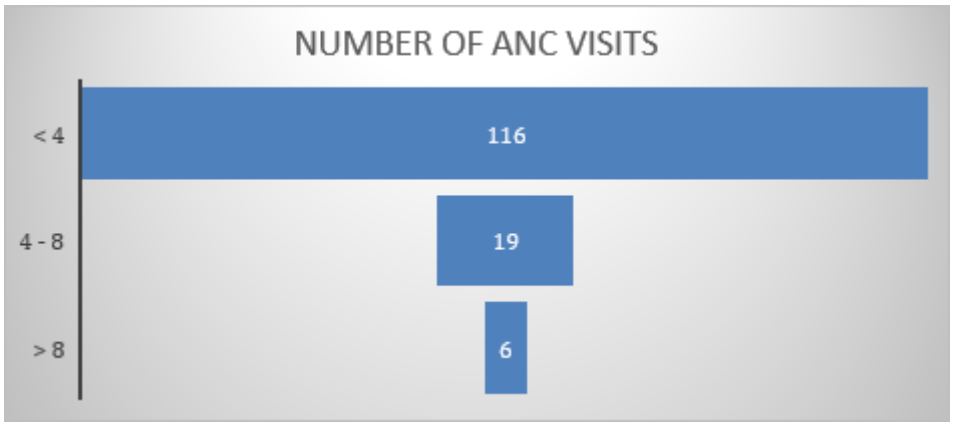

Figure 1: number of anc visits

Table 2: Multivariate analysis of utilization of maternal health services

Variables	**AOR(95% CI)**	**p- value**
Age of the respondents	1.0	**.018***
20-29 years	.094(.013-.663)	**.034***
30-39 years	.113(.015-.846)	
40-49 years		
Marital status		
Single	1.0	
Married/cohabiting	1.232(.127-11.970)	.857
Divorced/Separated	88.603(6.722-116.912)	**.001***
Widowed	4.461(.370-53.714)	.239
Current level of education		
No formal education at all	1.0	
Primary education	.196(.033-1.155)	.072
Secondary education	5.092(2.002-8.959)	**.046***
Vocational training	1.369(.074-1.834)	.223
Average monthly income estimate	1.0	**.010***
<30,000 shillings	2.083(1.012-4.553)	.704
30,000-80,000 shillings	1.442(.219-9.489)	.694
80,001-120,000 shillings	1.498(.200-11.216)	
>120,000 shillings		
Receive health education on MHS at the health facility		
Yes	1.0	
No	.039(.006-.171)	**.004***

AOR: Adjusted Odd Ratio; MHS: Maternal Health Services; *: Significance; CI: Confidence interval.

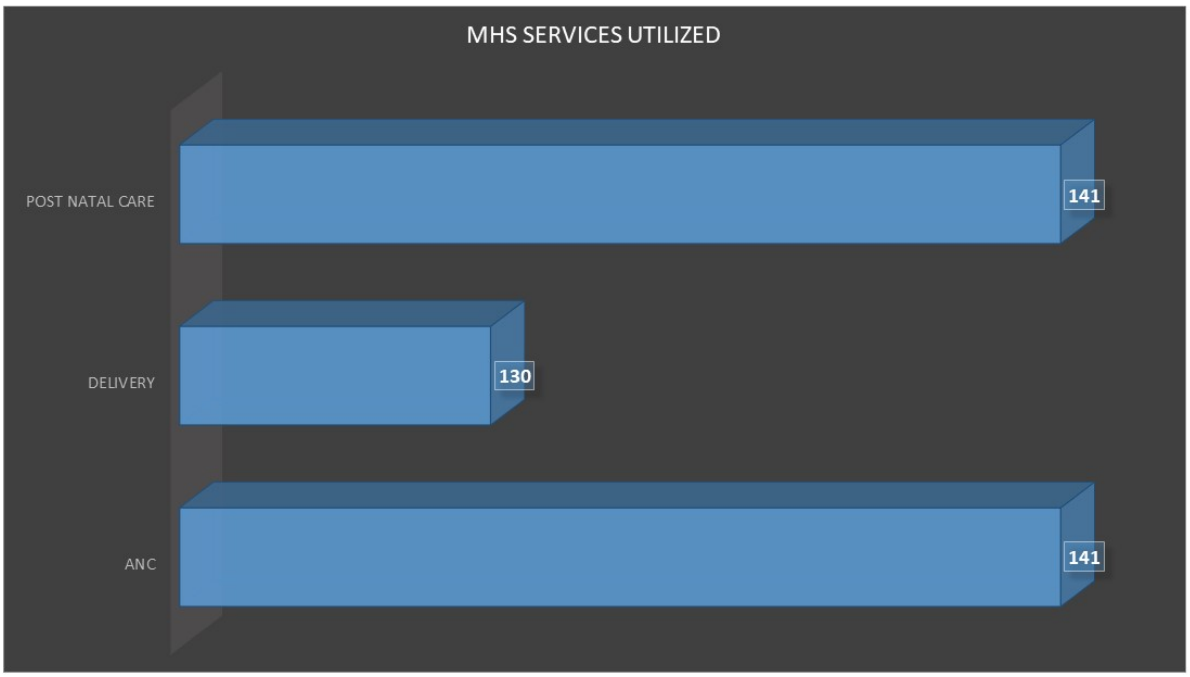

Chart 2: Utilization of Maternal Health Services

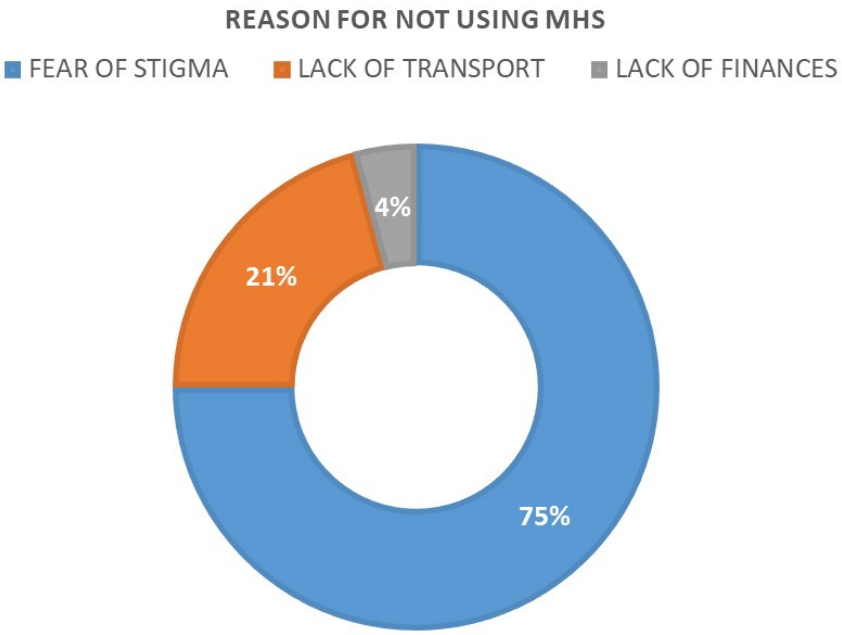

Chart 3: Reason for not using MHS among WWD

September 26, 2022

emerging themes and notable quotes from the interviews are presented here below:

Theme 1: Maternal health services utilized by WWDs in the community

From the interviews carried out with the key informants, they were asked to mention the maternal health services that women with disabilities utilize. The key informants noted that WWD utilized antenatal care, facility delivery, postnatal care, and others. It was noted that most WWD used antenatal care and facility delivery, and few go back for post-natal care.

—.... "*generally, women with disabilities attend antenatal care and delivery at the health facility but don't come back once discharged from the facility. at our facility, we are few midwives, and we are the same midwives who work on women without disabilities, so you find that the WWD has come for antenatal care and there is one who has come in to give birth is a woman without disability, so I have to rush and leave this one behind and attend to the other which makes WWD left out* .... " - **Midwife in Mbale**

Theme 2: Socio-economic differences among women with disabilities that influence the utilization of maternal health services.

Key informants noted that women with disabilities have limited social support from community members and the health system. It was widely reported that family and community members tended to be less supportive once a woman with a disability got pregnant. Lack of support was particularly pronounced for women with visual disabilities as such people often require the direct assistance of others to access needed healthcare. According to this account, such women who got pregnant were often reminded of their disability and the need for them to focus on that rather than getting pregnant.

One of the WWD leaders had this to say; *"It is not that WWD doesn't want to go for antenatal. The problem is...you know... we can't move alone without support, and people are very reluctant to help WWD. They normally say if I knew I couldn't walk to the clinic then I shouldn't have gotten pregnant."*

Experiences of women with disabilities. Regarding experiences of women with disabilities who had had more than one pregnancy, the women with a disability said that most of the women who were not married reported limited support from family and community members. Educated and married women with a disability and those who had children however reported better support systems. One of the WWD leaders had this to say

"I delivered my first child at home because I didn't get good support from my family because my husband had traveled, and my mother too was ill. But for this second one, I delivered in the hospital because my first child took care of me while I stayed in the hospital."

Theme 3: Effects of experience on utilization of MHS.

Study respondents reported that women who suffered from speech and hearing disabilities had difficulties communicating with healthcare providers at the health facility. A midwife had this to say:

"Last time I had a woman who couldn't hear at the clinic and had some pains that she felt around her waist. But I couldn't understand what she was talking about...I just gave her paracetamol and asked her to go home. Until one of her colleagues who understand came back the following day to explain to me though she was not there on that day to provide more details."

One of the WWD leaders had to say this:

"*It is frustrating to go to the clinic...nobody seems to understand me. When I go with my husband it is better because he understands me, and he then tells the nurses what I'm saying. But if I go alone, they don't understand me."*

Theme 4: Challenges relating to affordability of services

From the interviews carried out with the key informants, they were asked about the challenges they think women with disability face relating to the affordability of services including the availability of supplies such as delivery kits. It is reported that most healthcare facilities currently lack ramps, wheelchairs, disability-friendly delivery beds, appropriate separate toilets for dis-

abled persons, and personnel to assist the women to climb stairs, examination tables, and delivery beds. These problems often combined to discourage some women from seeking skilled care though some health facilities generally lack delivery beds or have few for all mothers, so women had to deliver on the floor including WWD. Health workers reported some difficulties with the infrastructure and equipment in providing care to physically disabled women:

"Sometimes it is very difficult for (disabled woman) to lie on the beds which are too high." - Midwife

Theme 5: Challenges faced by WWDs at the health facility

Theme 5(a): Shame/Embarrassment

Although pregnancy is considered normal and inevitable for married women, it is also a source of shame and embarrassment. Many disabled women were embarrassed, and this often prevented them from telling their in-laws about their pregnancy. One woman leader with a physical disability had this to say:

"It's difficult to tell parents-in-law, isn't it? I was frightened to tell my in-laws." Interestingly, almost all the participants who reported embarrassment as a barrier to care seeking had an antenatal check-up. However, embarrassment tended to affect decisions about place of birth. Women were afraid of disgracing their families if they showed their bodies during institutional delivery.

Health workers on the other hand reported having trouble providing services to embarrassed women. A midwife had this to say about women who are shy and embarrassed:

"It was very difficult for me to give service because she was shy and afraid to take off her clothes to examine the pregnancy during antenatal care."

Theme 5(b): Midwife shortages

Midwife shortages prolonged the time mothers spent accessing ANC services. Women with disabilities were not given special attention at the health facility and had to endure long waiting times along with all other mothers in the clinic. A midwife had to say this:

"Due to a shortage of midwives, pregnant women including women with disabilities can spend the full day seeking care [at the health facility], which discourages the very distant communities from seeking care."

The midwives themselves agreed with the above assessment. Another midwife had this to say:

"I am the only midwife and always stressed up. Whenever I have two or three labor cases at the same time, it is stressful working all the time. So now imagine having a WWD among them which requires special attention making it not easy on both the woman and me. Also, if I am conducting ANC and a labor case is brought in, I suspend the ANC and attend to that one. Sometimes, expectant mothers default on ANC attendance when it happens that way, and it becomes difficult tracing them because I am alone, and this affects all women not only WWD."

The skills shortage affected the quality of prenatal and postnatal service delivery: A Midwife had this to say:

"We do not have enough skilled staff especially those who handle WWD. Therefore, the expectations of WWD clients are sometimes not met. As I said earlier, one midwife is unable to explain certain issues clearly to pregnant women to understand because she has limited time to carry out all (the) education and detail[ed] explanations for instance those who cannot hear since we might not be trained with the sign language interpretation."

Theme 5(c): Healthcare providers' insensitivity and Negative attitudes

Negative attitudes of some nurses toward pregnant women can act as a deterrent to expectant mothers: A woman with a disability leader shared the following from personal experience:

"Expectant mothers with disabilities receive cheeky words from the nurses, so some do not receive maternal healthcare at the clinic because they have received enough of the insults such as - if you can climb the person who made you pregnant why can't you climb the examination bed? They are afraid to divulge the truth for fear of receiving worse treatments in subsequent attendance."

The majority of the WWD interviewed reported healthcare providers' insensitivity to and

lack of knowledge of their care needs as a major challenge to their desire to access and use skilled maternal healthcare services. One woman with WWD leader said:

"*...One time when one of my colleagues was pregnant, she went to see the midwife. As soon as she got to the health center one of the nurses shouted to her colleagues '... come and see a pregnant cripple!'... She felt embarrassed. Since that day she had not been to that health Centre.*"

Yet another WWD leader said:

"I think most of the nurses just don't understand that as disabled people, we have special needs. The other day I went to see the midwife. She just asked me to lie on the table...but the table was high. When I asked one of the nurses to help me, she just started shouting at me...she said why couldn't I climb and lie down myself. She didn't seem to understand that I couldn't stand on my own. She also said it wasn't her job to be helping cripples lie down on tables. I felt bad. These are things that had made me fight hard for our rights from all these terrible experiences."

Some participants also reported that information and advice from healthcare providers were sometimes irrelevant or not applicable to disabled women.

4.2. WWD leader had this to say:

"Sometimes the nurses don't think about our situation. When a colleague was pregnant and went for a checkup, the nurse said she should do exercise by walking every day. But look at me, we have a similar condition, she can't stand and walk. She can only move about in this wheelchair. So how do I or she benefit from this advice?"

Theme 6: Transportation challenges.

Interviews with the leaders of women with disabilities suggested that mobility from their homes to health facilities to receive care was a major challenge. Most of the women with visual impairment and physical disability as well as those in rural areas particularly reported this challenge, perhaps, because access to maternal healthcare often involves traveling relatively long distances. A WWD leader had this to say:

"When I was pregnant, I wanted to go to the hospital to see the midwife but because of my condition I couldn't go because the distance to the health facility was long."

Mobility problems were often compounded by resource constraints and a public transport system that was not disability friendly. A WWD leader had this to say:

"*—I want to go and check my pregnancy. My problem is how to move from here to the health center. I can't paddle my wheelchair to the health center because it is far. If I had enough money, I will just hire a special fire taxi to take me there...I can't also use the public bus because I can't get into the bus and even if I get somebody to help me into the bus where to put my wheelchair is a problem.*"

Although WWD leaders reported that the cost of maternal healthcare was not a serious deterrence because of the free maternal healthcare policy, difficulties with mobility and the prohibitive cost involved in arranging appropriate transportation often prevented many women with disability from accessing skilled care.

5. DISCUSSION.

Key Results

Socio-economic determinants associated with utilizing MHS

The study findings revealed that there is statistically a significant association between socioeconomic determinants and the utilization of maternal health services. The education level of respondents likes having secondary education increased the chances of the utilization of MHS. This is similar to a study by (Tarekegn, Lieberman, and Giedraitis, 2014)who found that the education of women who completed higher education was more likely to utilize MHS.

The study also revealed that there was a statistically significant association between the income level of respondents who earned a monthly income of 30,000-80,000 shillings with the increase in the utilization of MHS. This is probably because WWD who are working and earning money may be able to save and decide to spend it on

maternal health care services & transport to the health facility. This is supported by several studies, for instance, a limited ability to pay and high hospital costs have been identified as the major barriers for the rural poor wishing to access health care, due to economic difficulties in rural areas(Ngoma *et al.,* 2019; Matin *et al.,* 2021). It was noted women were not able to afford costs related to deliveries even if the services in some places were free of charge, and they were unable to pay for transport in case of the referral or the facility is away from home. A woman quoted *"I want to go and check my pregnancy. My problem is how to move from here to the health center. I can't paddle my wheelchair to the health center because it is far. If I had enough money, I will just hire a special fire taxi to take me there...I can't also use the public bus because I can't get into the bus and even if I get somebody to help me into the bus where to put my wheelchair is a problem."* Mobility problems were often compounded by resource constraints and a public transport system that is not disability friendly. Therefore, Employment can increase women's financial ability to use good-quality medical care and can empower women to take part in the decision-making process about their health care(Ahmed *et al.,* 2010; Remme *et al.,* 2020).

Most of the respondents agreed that support from spouses/partners increases the utilization of MHS. A woman quoted *"As I can't see it is always difficult to find a way around for the visually disabled mother like me, especially if my husband or someone is not around to help me. The health workers too, won't help me since they could be busy with another client.*" This is in line with a study by Malouf, Henderson, and Redshaw, (2017) who found that some gaps in maternity care provision for these women related to interpersonal aspects of care such as communication, feeling listened to and supported, involvement in decision-making, having a trusted and respected relationship with clinical staff. Having support from a spouse could plug this gap and enable mothers to overcome the communication challenges that they face.

Accessibility of MHS for WWD

There was statistically a significant association between accessibility and utilization of maternal health services among women with disabilities since most respondents agreed that distance to the health facility was a challenge because it involves traveling and living beyond 5km reduced chances of utilizing MHS. A WWD leader quotes *"When I was pregnant, I wanted to go to the hospital to see the midwife but because of my condition I couldn't go because the distance to the health facility was long."* This concurs with the study by Ahumuza *et al.*, (2014)who showed that PWPDs face a multitude of challenges in accessing health services including distant health facilities. In agreement, Nyathi *et al.,* (2017) found that accessibility factors such as long distances to health facilities, influence women's utilization of ANC services in Mangwe district, Zimbabwe.

Receiving health education increased the utilization of maternal health services among women with disabilities However the quality and depth of the health education is under question, especially regarding women with hearing disabilities. When the variables that were significant at the bivariate level, were adjusted, participants who do not receive health education from the health facility were less likely to utilize maternal health services compared to their counterparts who do receive health education at the health facility (Adjusted OR: .039, 95% CI: .006-.171, p-value-0.004). Health facilities did not have support in form of health education material for some disabilities like women with hearing and seeing disabilities which makes communication of information hard to pass on, this concurs with the study by Jackson, (2013) who found that midwives have a key role in exchanging information and taking time to understand deaf women's needs and their partners when accessing maternity services and that deaf women often have limited education and low-status jobs and higher unemployment rates they are also deprived of information as they limited access to media. This communication challenge was also noted as an emerging theme from key informant interviews with both the WWD and the health facility staff.

The proportion of WWD utilizing

facility-based MHS

The study findings revealed low levels of utilization of maternal health services among women with disabilities in the Mbale district. The gold standard of utilization as per the Uganda demographic health survey was 86.9% in ANC (UBOS, 2016). The present study found that utilization was 74.6% in ANC, 74.6% in PNC, and 68.8% for health facility deliveries, which was below par. Most notable is the fact that only 17.7% of those who reported having attended ANC had completed 4 or more visits significantly lower than the national average of 60% and the desired target of 80% (MOH Uganda, 2013; UBOS, 2016). This is in line with a study by Orwa *et al.,* (2019), that found similarly low MHS utilization rates in Mwanza Region among women with disabilities with 58.2% having attended ANC4+, 76.8% delivered in the health facility. This implies that it is important to take note of this low utilization of MHS among disabled women as it is of paramount importance that WWD utilizes facility-based maternal healthcare services to reduce the chances of maternal morbidity and mortality among women with disability.

Both qualitative and quantitative study findings further showed that most respondents identified stigmatization as being the main cause of the low levels of utilization of maternal health among women with disabilities. There are also negative attitudes of some nurses toward pregnant women with disabilities that can act as a deterrent to expectant mothers which stigmatizes them. WWD leader quotes this from her own experience *"Expectant mothers with disabilities receive cheeky words from the nurses, so some do not receive maternal healthcare at the clinic because they have received enough of the insults such as if you can climb the person who made you pregnant why can't you climb the examination bed? They are afraid to divulge the truth for fear of receiving worse treatments in subsequent attendance."* This is in line with Mulumba *et al.,* (2014) who found that negative perception from family and community attitudes toward people with disabilities, leads to feelings of rejection, shyness, and lack of confidence in seeking health facilities since the community believed they were not supposed to get pregnant. Furthermore, stigma rumors about WWD that they encountered in the community affected the use of MHS.

Interpretation

From the study findings, it can be concluded that there is statistically a significant association between the socio-economic determinants and the utilization of maternal health services among WWD. This was ascertained as respondents agreed that having received health education on MHS at the health facility increased the utilization of maternal health services to a great extent. The findings revealed middle-aged WWD between 20-29yrs utilized MHS more than those between 30- 39yrs. And this is because WWD between 30-39yrs felt like they had enough experience. Furthermore, WWD who had a monthly income utilized MHS because they were able to meet some of the expenses like transport fares to the health facility.

Furthermore, it can be concluded that there is an association between accessibility determinants and the utilization of maternal health services. This was ascertained as most of the Key informants agreed that distance to the health facility, cost of transport, means of transport, family/spouse support, inappropriate physical infrastructures at the health facilities, stigmatization, and shortage of specialized staff were found to influence utilization of MHS among WWDs.

Finally, the proportion of women with disabilities who used utilized maternal health services at the health facility was considerably low and the primary reason for not utilizing MHS at the health facility was stigma and that other barrier including the accessibility of services. Having a source of monthly income, support from a spouse, and an education level above secondary school were identified as having a positive influence on the utilization of maternal health services.

The researchers have the following recommendations to make:

• Support for WWD to have a means of employment that would enable them to have a regular monthly income would empower them to better access maternal health services.

• Providing support and opportunities for WWD to acquire at least secondary level education would increase their utilization of MHS.

• Training and equipping health facility staff to be more sensitive to and attend to the unique needs of WWD could improve the experiences of WWD seeking MHS at the health facility. This may reduce their fear of stigmatization thus improving service utilization.

• Since health education was strongly associated with the utilization of maternal health services; it is recommended that future studies consider exploring the quality of health education and possible barriers for women with hearing and sight difficulty. This would pave the way for improved and inclusive health education programs that would further increase MHS utilization among WWD.

• Like this study, most of the research carried out among WWD looking into their MHS utilization are descriptive studies. There is an opportunity for experimental studies and implementation research that would identify effective initiatives to improve the accessibility of MHS for WWD.

Generalizability

The application of findings from this study is limited to women with disability in a low-income rural setting as was found in the Mbale district of Uganda. This is because the findings were linked to the financial and physical accessibility of the services. The socio-economic findings of the study were most probably influenced by socio-cultural norms and perceptions and are therefore most applicable to societies with similar cultures mostly in sub-Saharan Africa.

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Ethical approval:

This study's protocol was reviewed and approval obtained from the Research Ethics Committee of Clarke International University; reference number CLARKE-2020-35.

Acronyms & Abbreviations:

- ANC - Antenatal care
- AOR - Adjusted Odds Ratio
- CI - Confidence Interval
- CIV - Content Validity Index
- COR - Crude Odds Ratio
- MHS - Maternal Health Services
- SPSS - Statistical package for social sciences
- WWD - Women with disability

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