Influence of Socio-demographic Factors on Health Facility-based Childbirth in Yambio County, South Sudan. A Cross-Sectional Study.

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Abstract

Background:

South Sudan is facing a very big challenge with making maternal care services available for women in rural areas due to a lack of sufficient policy for strengthening the health sector in the Country. It's found out that, most women in South Sudan give birth to their babies on the floor in government hospitals, cutting the umbilical cord with a stick. The study aims to look at the Influence of socio-demographic factors on health facility-based childbirth in Yambio County, South Sudan.

Methodology:

This was a cross-sectional study using a mixed methods approach to assess factors that influence health facility-based childbirth. This study was conducted from August 2021 to September 2021 among lactating women using Yambio State Hospital for health facility-based childbirth and those residing in Yambio town Payam, Western Equatoria State, South Sudan.

Results:

(50.3%) of the respondents aged 21-25 years old, the majority of the respondents only completed a primary level of education (46%), followed by those with secondary (32%) and with tertiary education (22%). (82%) were married. The majority (36.8%) of the respondent was unemployed followed by those self-employed (26.8%). Nearly three-quarters (73%) of the respondents did indicate that they had monthly incomes of less than 10,000 SSP. About 23% of respondents had an income of (10,000 SSP – 20,000 SSP) and only about 4% had an income of more than 20,000 SSP.

Conclusion:

The socio-demographic factors associated with health facility-based childbirth include the mother's age (21 – 25 years), being a full-time student, and working for either government or private business.

Recommendations:

Women and their husbands should have a source of income so that they would be able to have transport that expectant mothers can easily take to the hospital.

Keywords: Socio-demographic Factors, Health Facility-based Childbirth, South Sudan, Maternal Care Services, Date Submitted: 2022-08-05 Date Accepted: 2022-09-20

1. Background:

It's identified that when women give birth at their homes in developing countries, there's the belief of poor maternal services provided which frequently happens under unhygienic cir-

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cumstances and without the support of professionally trained skilled birth assistants according to Emmanuel Dankwah, (2019). Henceforth, childbirth at home is connected to the heightened danger of childbirth complications including obstructed labour, retained placenta, and postpartum hemorrhage among others. According to Emmanuel Dankwah, (2019), women who have economic and financial challenges, are less educated, reside in the countryside, with an experience of given birth before, and who have not been sensitized to pregnancy complications, have a high risk of giving birth at homes.

According to Cindy Feng (2019), annually, an estimated 200 million pregnancies occurs. Giving birth to children at home is identified to have increased the risk of maternal mortalities, hence force, health facility-based childbirth helps to prevent maternal mortalities and morbidities and to improve the health of newborns. Despite this recognition of the importance of health facility deliveries, a significant proportion of childbirths still take place outside health facilities in low-income countries. The most unfortunate consequence of giving birth outside the health facility is identified to lead to an increase in maternal deaths of at least 830 women who are in labour that occur each day because of pregnancy and childbirth-related difficulties. It was identified that a substantial number of women had died during childbirth, with an estimation of 3 million women and 2.65 million miscarriages worldwide in 2008 (Emmanuel Dankwah, 2019).

According to Yifru Berhan (2014). The small number of women who give birth to their babies in their homes in developing countries is reported to be one of the hurdles in achieving the Millennium Development Goal of a global reduction of maternal deaths by 75% by 2015. The danger of giving birth at home with no support from skilled birth attendants poses health risks to women. Distance to the health facilities where women can access maternal services is identified to be one of the challenges that lead to an increase in the number of home deliveries, thus affecting the number of women who could have given birth in the health facilities (Asres Berhen, 2014). There is a challenge in most developing countries that affect health facility-based childbirth, as a result of beliefs in traditional healers, the level of

education, lack of transport facilities and insecurity at night, high cost of health services, and unwelcoming health service providers among others are attributed to the low health facility delivery in developing countries (Yifru Berhan, 2014).

According to South Sudan Village Assessment Survey Report (2013), which was conducted by International Organization for Migration;(IOM), it was identified that South Sudan is facing a very big challenge in making maternal care services available for women in rural areas due to lack of sufficient policy for strengthening health sector in the Country. It was also identified that only 25% of the population of South Sudan has regular access to health facilities. Despite having a four-tier health services structure, South Sudan's health facilities do not provide official referrals, placing the decision to seek specialized care at the discretion of the patient (Ministry of Health: Health Sector Development Plan 2011 – 2015).

The restricted availability of health care services is affected directly by the shortage of basic public services and insufficient existing health facilities. According to reports from WHO and the Ministry of Health, South Sudan has the highest shortage of physicians and medical doctors. The study identified that South Sudan has only 189 medical doctors, and one doctor is alleged to be serving 39,088 persons or patients. It was identified that Central Equatoria has the highest number of medical doctors, who are concentrated in South Sudan's capital city. The percentage is at 51% in Central Equatoria State while Western Equatoria and Jonglei do not possess any qualified South Sudanese physicians (South Sudan Medical Journal (2012)).

An estimated 75% of all child deaths in South Sudan are due to avoidable diseases, such as diarrhea, malaria, and pneumonia. It's found out that, most women in South Sudan give birth to their babies on the floor in government hospitals, cutting the umbilical cord with a stick. This study aims to study the Influence of socio-demographic factors on health facility-based childbirth in Yam-

bio County, South

2. Methodology:

Research Design

This was a cross-sectional study using a mixed methods approach to assess factors that influence health facility-based childbirth.

3. Scope of the Study

Study area

The population of Yambio County (estimated at 40,382 people according to the 2021 population projection) predominately depends on substance farming. The study was conducted in the State Ministry of Health and Yambio State Hospital in Western Equatoria State in Yambio town. Ministry of Health is in the center of Yambio town, and Yambio State Hospital is in the Eastern part of Yambio town along Maridi road, behind the State Ministry of Finance. Yambio State hospital lies about a kilometer East of Yambio town Payam. The coordinates for Yambio are latitude: 4.577569 and longitude: 28.398785. Figure 1 below shows the study area.

Study Period

This study was conducted from August 2021 to September 2021.

Study population

The study was conducted among lactating women using Yambio State Hospital for health facility-based childbirth and those residing in Yambio town Payam, Western Equatoria State.

Eligibility criteria

Inclusion Criteria

Entitled partakers were lactating mothers who had given birth to their babies out of the health facility and those who gave birth to their babies in the health facility and were at least 18 years and above and able to provide either verbal or written informed consent to take part in the study

Exclusion Criteria

Participants who did not give written or verbal informed consent are those who were severely ill to take part in the study and were not considered to participate in the study.

Sample size computation

The sample size was determined using the formula:

Where:

N = Target Population.

z = is standardized normal distribution curve value for the 95% confidence interval (1.96).

p = estimated prevalence of women delivering at the facility in the study area (0.50).

d = margin of error at 5%.

= 384.16 ~385 respondents

A total of 385 respondents were estimated for this study based on the sample size computation above

Sampling Techniques.

Quantitative Strand:

The study employed simple random sampling in determining those that will be contacted for a response. Simple random sampling refers to a subsection of a statistical populace in which all members of the subgroup have an equal chance of being selected. Simple random sampling is intended to be an unbiased representation of a group. The researcher used a simple random sample using random draws to select the respondents. This method was applied to women between the age of 18-49 years old who give birth to their babies either at home or in the health facility. This meant that the researcher selected an equal number of the women who gave birth to their babies in the health facilities and those who had given birth out of the health facility. The researcher used the list of the women who had given birth to their babies in the health facilities in Yambio (as a sampling frame) for the selection of the respondents and those who have given birth out of the health facility.

Data collection instruments

Questionnaire

One-on-one questionnaires were administered to the mothers to collect information on socio-demographic, cultural, and institutional factors that affect health facility delivery in Yambio, Western Equatoria State. These were administered to both women who gave birth in the health facilities and those who gave birth to their babies outside of the health facility.

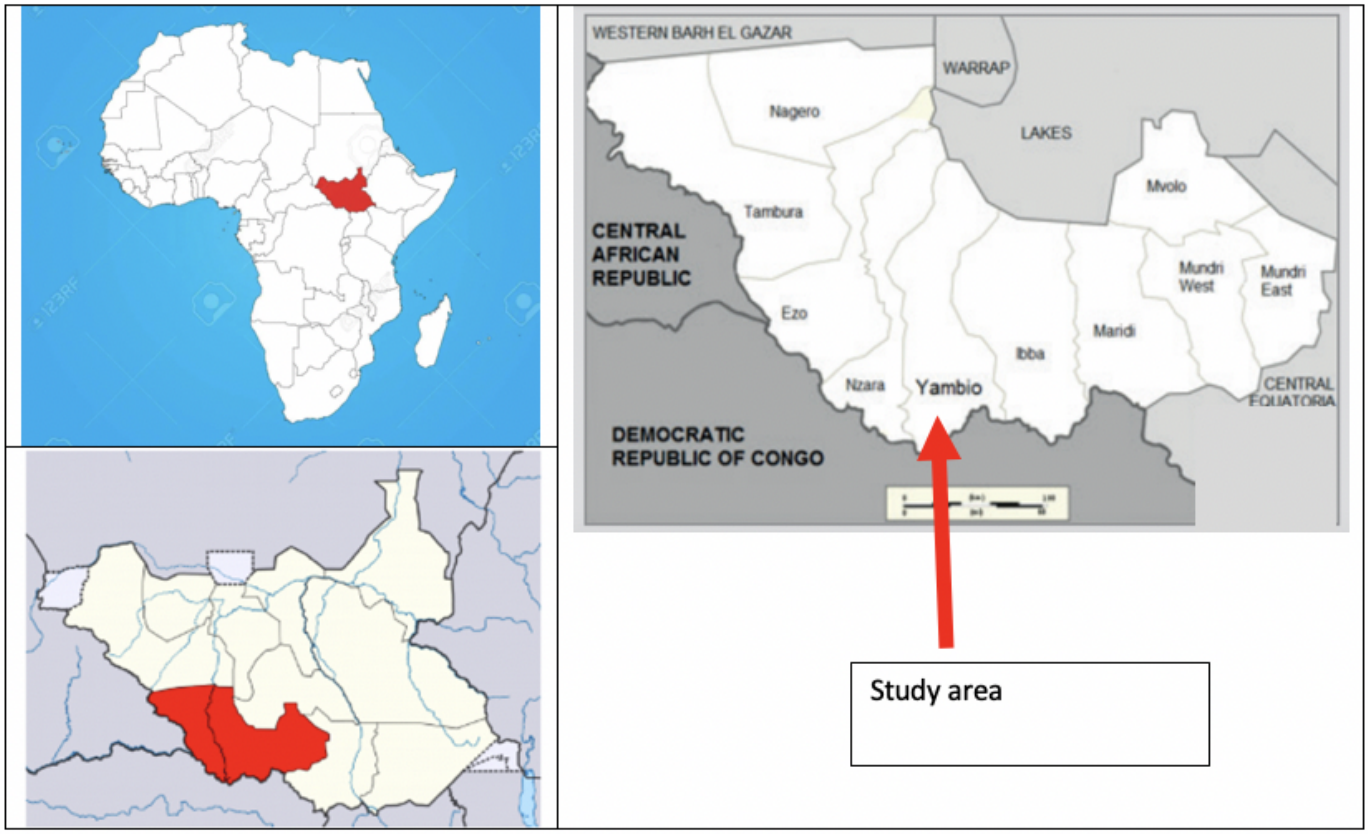

Figure 1: Map of the study area

Study variables

Independent Variables

An independent variable is a variable that changes or is monitored in a scientific experiment to test the impacts on the dependent variable. The independent variables for this study were socio-demographic factors, cultural factors, and institutional factors.

Dependent Variables

A dependent variable refers to variables that are tested and measured in a scientific experiment. It's that type of variable that is 'dependent' on independent variables. When the scientific experiment vicissitudes the independent variable, its result on the dependent variable is examined and documented. Hence the dependent variable for this study was the preference to deliver at a health facility or not.

Data Gathering Procedure and Quality control

These are the procedures followed and implemented before the data collection process started with the interviewees.

1. An introduction letter was issued from the school of postgraduate studies (SPGS) to help the researcher in soliciting endorsement from the state authority to conduct the study from the consenting agencies in the Western Equatoria State Ministry of Health.

2. After approval, the researcher was able to obtain a list of the potential respondents from the Ministry of Health and State Hospital administration.

3. The researcher then employed three research assistants, who were adequately trained on ethical data collection before data collection started.

To ensure quality control, the following were put in place.

- Data collectors were trained erstwhile to the data collection.
- The data collection tool was pre-tested earlier than the start of actual data collection.
- During the data collection, the principal investigator reviewed the completed forms for ac-

curacy and completeness on each end day of data collection.

• Also, debriefing sessions were done at the end of each day of data collection

• Each participant's records were then assigned a unique number, which can be traced back to the master database to ensure anonymity.

Data Management and Analysis Plan

Data management

Data collected were entered into excel. Data cleaning was done and checked for missing values, and outliers among others. The cleaned data set was exported to Stata for analysis.

4. Data analysis

Quantitative Data Analysis

The first step was to check the dataset for missing values and multi-collinearity. The basic sociodemographic characteristics of participants were presented as percentages (stratified by place of delivery). Chi-square tests were performed to check for significant associations between the explanatory variables and the place of delivery. Variables that were found to be significantly associated in the $\chi 2$ tests were selected for the multivariable regression analysis model to control for any potential confounding variables. As the outcome variable was dichotomous, a binary logistic regression model was used to measure the adjusted associations between the explanatory variables and the place of delivery. The results were presented as ORs with corresponding 95% CIs. A p-value of <0.05 was statistically significant for all associations.

Data analysis was conducted using Stata Version 15.1 (Stata-Corp LP, Texas, USA).

Ethical considerations

Institution approval

Endorsement for the study was sought from Cavendish University and the Ministry of Health Western Equatoria State as well as Yambio State Hospital where the data collection was done.

Informed consent

A participant information sheet was prepared to explain the main reasons for conducting this study, the anticipated benefits of this study, the confidentiality of the information, and the significance of this study to the Government and the people of South Sudan. The respondents provided verbal consent for their participation in the data collection. The participants clearly understood their right to withdraw from the interviews at any time of their choice without explaining their withdrawals interviews. Confidentiality forms and consent forms were used for the protection of the information collected from the respondents for no revelation will be made without any prior approval of the institutional review boards who approved these studies.

Anticipated Limitation

This study was anticipated to have a challenge of respondents' turnover to the daily health facility-based childbirth services which could delay the work plan and schedule planned for the data collection. However, more time was allocated for the data collection to overcome this limitation.

There was insecurity in Yambio during the time of data collection. The principal researcher had put in place a plan to use other Health facilities in Yambio, through the Ministry of Health to collect data.

5. Results:

Age of the respondent

More than half (50.3%) of the respondents were aged 21-25 years old. This was followed by those aged (35 - 40) years constituting 18.4 %. Except those above 40 years (accounting for just 4.3%). The rest of the age ranges constituted about 9% as shown in Figure 2.

Educational attainment

The number of respondents decreased by the education level. For instance, the majority of the respondents only completed the primary level of education (46%), followed by those with secondary (32%) and with tertiary education (22%) (Figure 3).

Marital status

More than three-quarters (82%) were married. Those who were either separated/divorced and

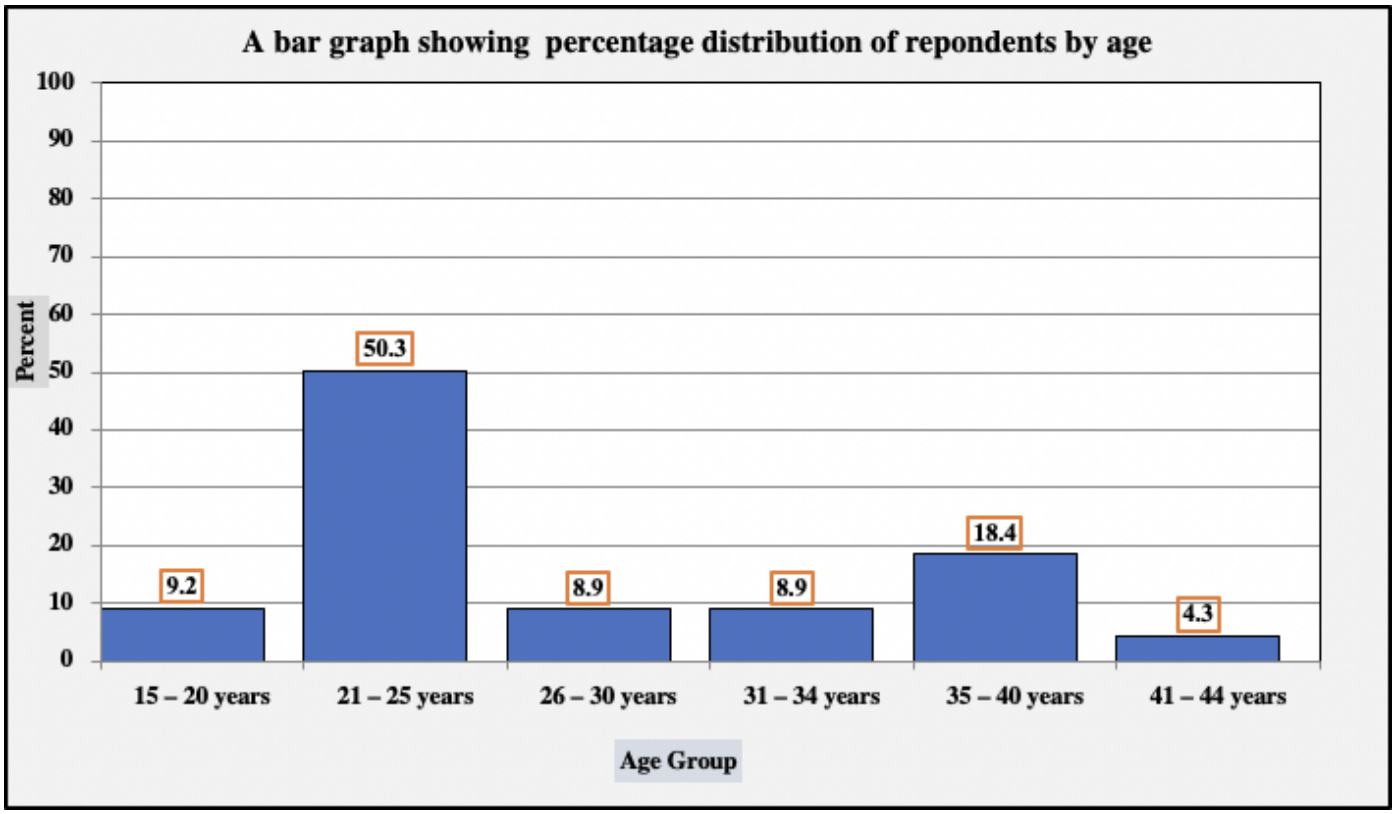

Figure 2: Percentage distribution of respondents by age

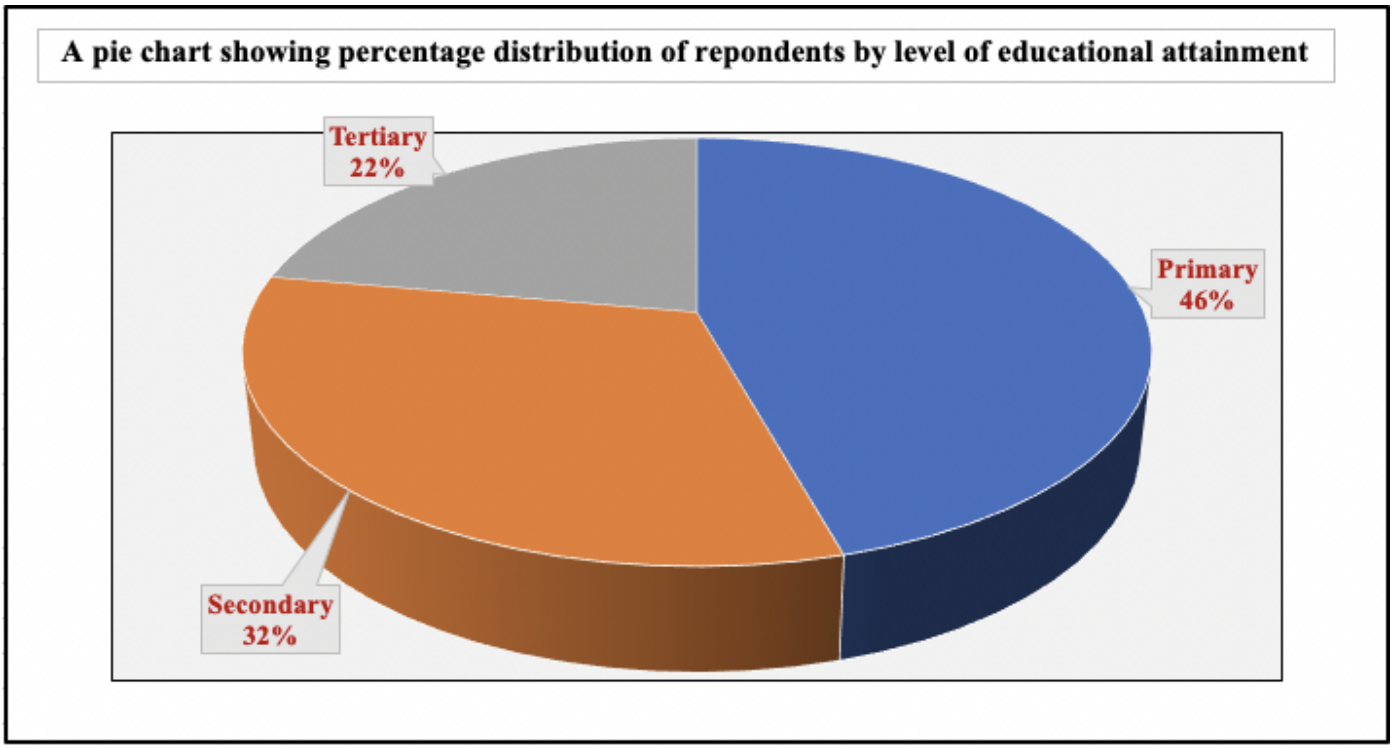

Figure 3: Percentage distribution of respondents by level of educational attainment

those single only comprised about 9% each as shown in Figure 4.

Respondent's occupation

The majority (36.8%) of the respondent were unemployed followed by those self-employed (26.8%). Paid employees and students each accounted for just 18% of all respondents (Figure 5).

Respondent's income

Nearly three quarters (73%) of the respondents did indicate that they had monthly incomes of less than 10,000 SSP. About 23% of respondents had income of (10,000 SSP – 20,000 SSP) and only about 4% had income of more than 20,000 SSP as shown below in Figure 6.

Number of children

Most of the respondents have at most 3 children (55%). Quite a sizeable number (45%) have more than 3 children as shown in Figure 7 below.

Husband's occupation

The majority of the respondents' husbands were working for the government (31.6%). Similarly, some were also doing their private business or working with International Non-Governmental Organizations (INGOs) accounting for 18.4% each. A sizeable proportion (27%) were not working.

Demographic factors associated with health facility-based childbirth in Yambio County.

A bivariate analysis of demographic factors against health facility delivery was run and is presented below.

Even if the age group of women aged 35 years and above; those particularly aged 35 – 40 years were more than twice to give birth at a health facility [COR = 2.78, 95% CI (1.17 – 6.57)] as compared to those younger. Those more than 40 years exclusively preferred facility delivery as compared to those 35 years and below.

Similarly, those having paid employment [COR = 0.34, 95% CI (0.18 – 0.65)], full-time employees [COR = 3, 95%CI] (1.58 – 5.71) are most likely to give birth to their babies in the health facility as compared to those who are self-employed and those unemployed.

Similarly, those with an income level from 10,000 SSP – 20,000 SSP were more likely to give birth in a health facility [COR= 0.52, 95%CI (0.31 – 0.85)] as compared to those whose income was reported to be less than 10,000 SSP. Surprisingly those with incomes more than 20,000 SSP indicated that they would prefer not to deliver at a health facility. However, there were few observations in this category (16 only which may explain these results)

Those respondents whose husbands work with international NGOs were more likely to give birth in a health facility [COR = 3.12, 95% CI (1.59 – 6.13)] as compared to those whose husbands are not working, working for the government, running a private business or working for national non-governmental organizations (NNGOs, who all prefer not to deliver at a health facility. However, there were few observations in this category; 16 only and may explain this results).

5.1. Multivariate analysis of demographic factors against health facility delivery was run and is presented below

The multivariate analysis shows that respondents who indicate their occupation as a student (full time) were more than 8 times more likely to deliver at a health facility as compared to those in other occupation categories [AOR =8.48, 95% CI (1.08 – 66.40)]

Respondents whose husbands worked in their private business were about 6 times more likely to deliver at a health facility [AOR =6.51, 95% CI (5.18 – 8.18)]. Those whose husbands also worked with the government were also 23 times [AOR = 23.64, 95% CI (3.31 –168.85)] more likely to deliver at a health facility that those not working, working for INGOs and NNGOs.

6. Discussion:

Socio-demographic factors associated with health facility-based childbirth.

The research identified that respondents' age, occupation, and partner's occupation showed a significant relationship between accessing health facilities for childbirth among expectant mothers.

The study identified that the mother's age was significantly associated with health facility-based

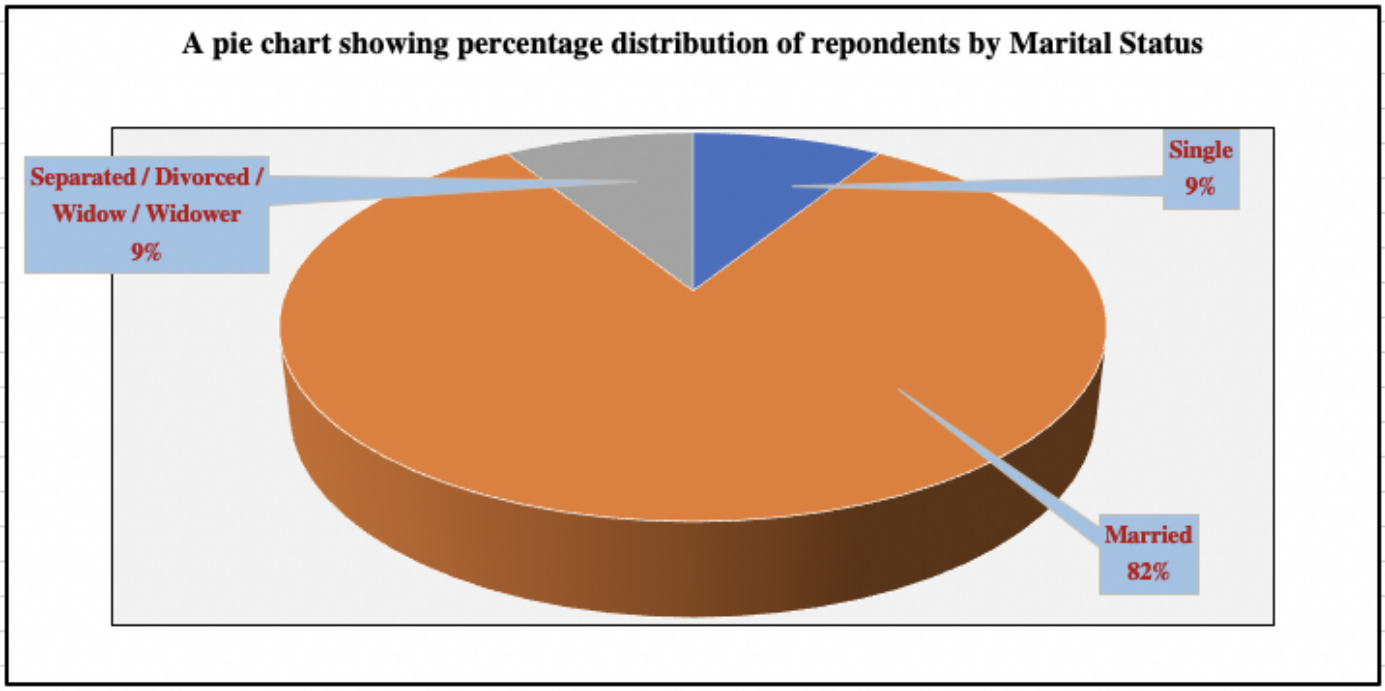

Figure 4: Percentage distribution of respondents by marital status

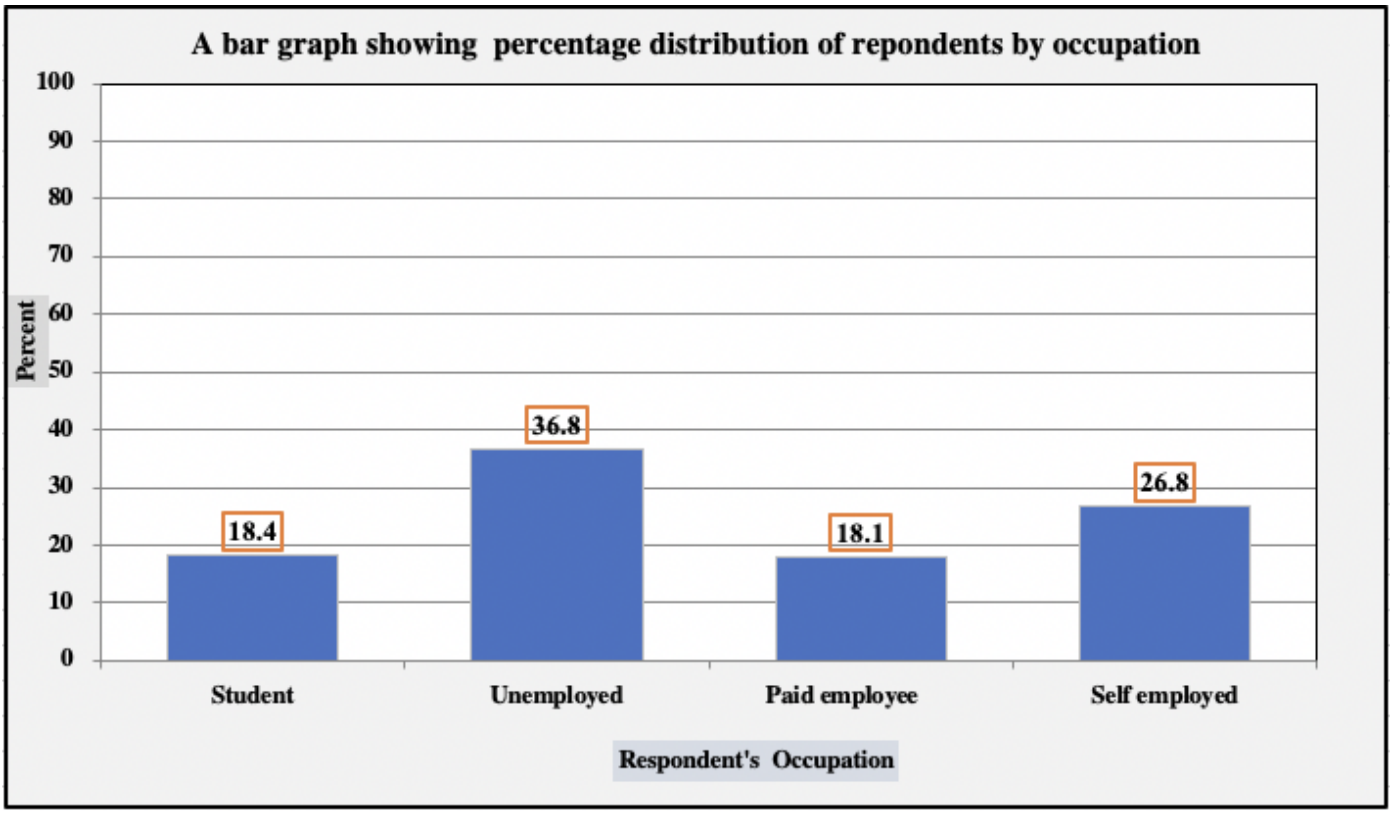

Figure 5: Percentage distribution of respondents by occupation

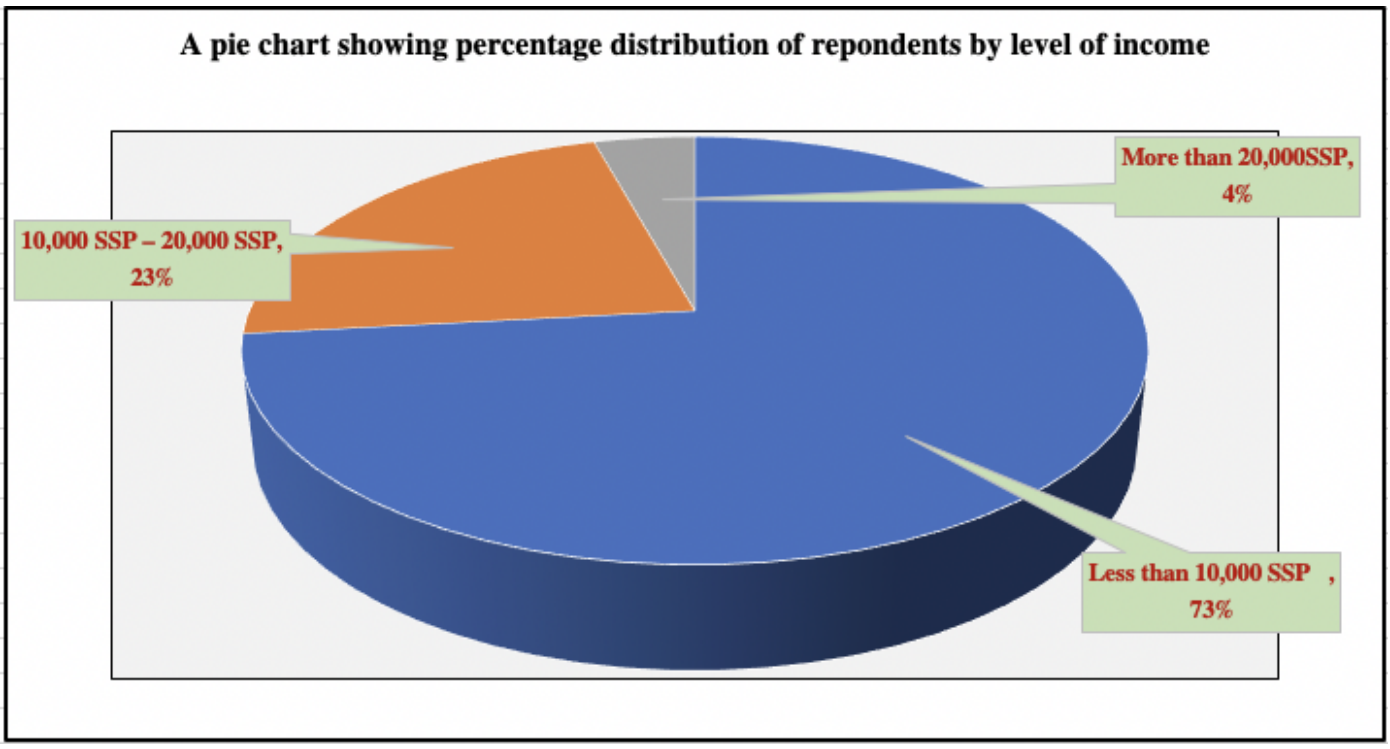

Figure 6: Percentage distribution of respondents by level of income

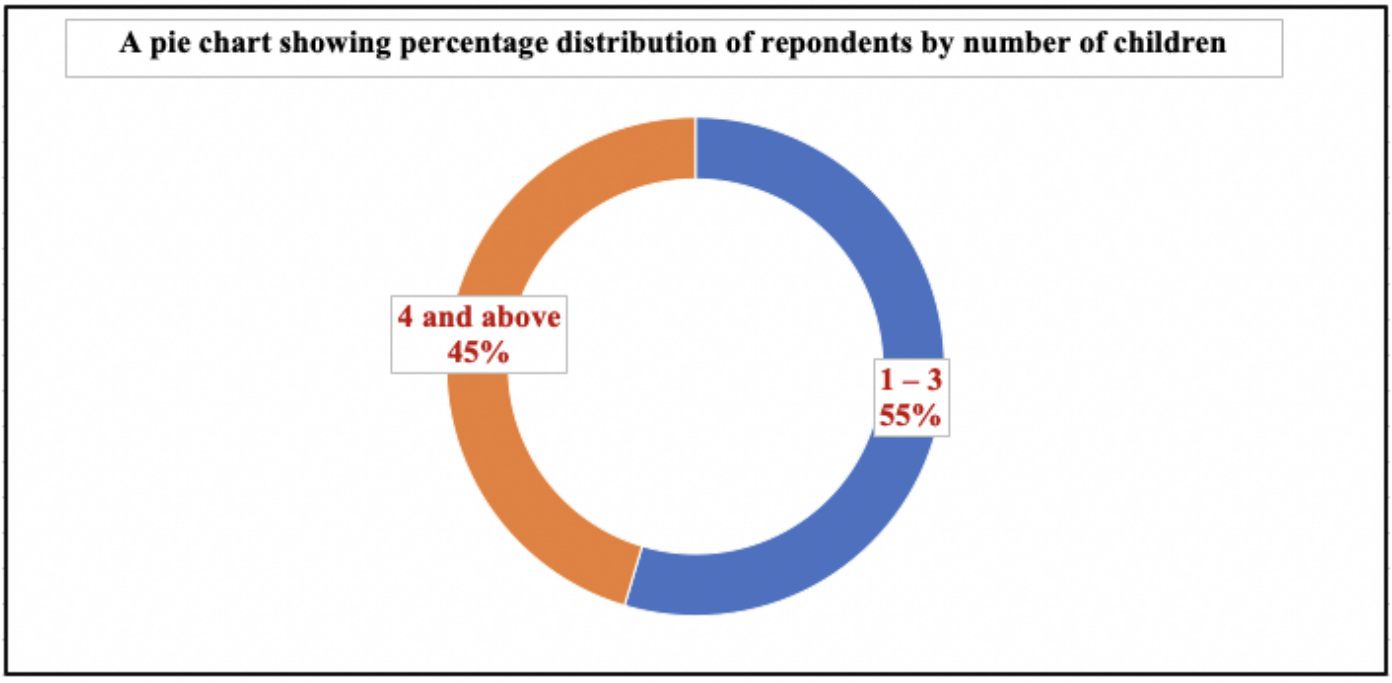

Figure 7: Percentage distribution of respondents by number of children

Table 1: Bivariate and multivariable analysis of facility delivery by demographic variables inYambio(n = 370)

		Crude OR (95% CI)	P- Value	Adjusted OR (95% CI)	P- Value
Age group					
	15 – 20 years	1		1	
	21 – 25 years	0.58 (0.28 – 1.20)	0.142	1.45 (1.13 – 1.60)	
	26 – 30 years	1.1 (0.41 – 2.77)	0.901		
	31 – 34 years	1.1 (0.41 – 2.77)	0.901		
	35 – 40 years	2.78 (1.17 – 6.57)	0.020		
	41 – 44 years	–	–		
Marital Status					
	Married	1			
	Separated / Divorced / Widow / Widower	1.16 (0.57 – 2.39)	0.681		
	Single	–	–		
Occupation					
	Unemployed	1			
	Paid employee	0.34 (0.18 – 0.65)	0.001		
	Self employed	0.98 (0.58 – 1.64)	0.939		
	Student (full time)	3 (1.58 – 5.71)	0.001	8.48 (1.08 – 66.40)	0.042
Income Level					
	Less than 10,000 SSP	1			
	10,00 SSP – 20,000 SSP	0.52 (0.31 – 0.85)	0.010		
	More than 20,000 SSP	–	–		
Husband's occupation					
	Not working	1		1	
	Working for INGOs	3.12 (1.59 – 6.13)	0.001	–	
	Working for government	0.80 (0.47 – 1.37)	0.426	23.64 (3.31 –168.85)	0.002
	Private business	1.04 (0.56 – 1.93)	0.899	6.51 (5.18 – 8.18)	0.000
	Working for NNGO	–	–	–	

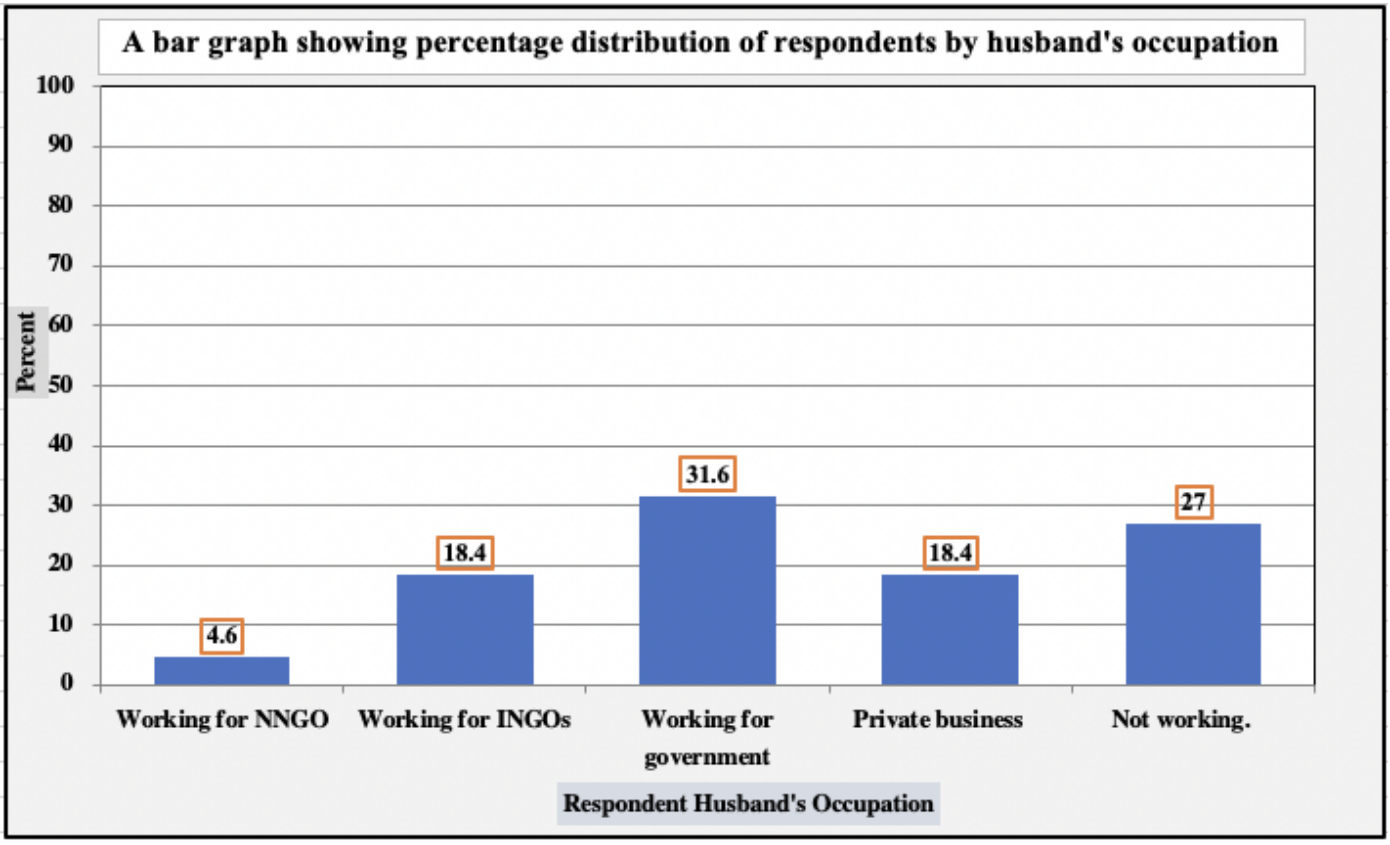

Figure 8: Percentage distribution of respondents by husband's occupation

childbirth in Yambio county. The findings identified by this study are similar to other studies conducted by other scholars. Similar study from Ethiopia (Yaya *et al.* 2018) identified the mother's age at first birth was reported to have significant in women's choice of place of childbirth.

Even if the evidence is inclusive on women's occupation influence on health facility delivery as a study by Tongun *et al.* (2019) (Tongun *et al.* 2019) didn't identify a relationship between mothers' occupation and health facility-based childbirth, from the current study, respondents' and partner's occupation was significantly associated with facility delivery. This is simillar to other studies that showed that partner occupation was also significant for health facility-based childbirth (Mutiiria, Mbugua & Marwanga 2021).

Wealth is significantly associated with Health facility-based childbirth. From the current study, respondents', and their partners' occupations (which can be sued as a proxy for wealth) were significantly associated with health facility-based childbirth. This finding is thus in line with numerous studies from Sub-Saharan Africa and beyond. Therefore, wealth has significantly associated with health facility-based childbirth in Kenya (Karanja *et al.* 2018), Uganda (Mugambe *et al.* 2021), Ethiopia (Yaya *et al.* 2018), Malawi (Mazalale *et al.* 2015), Guinea-Bissau (Yaya 2019) and even Bangladesh (Kabir *et al.* 2020).

From the current study, those who were students were more than 8 times to giving birth at a facility then. This could be attributed to the fact that they could be they are being thought this and understand the risks of not delivering at a facility. Even if it would be expected that education level is associated with the facility delivery; for instance, one study found out that women who have completed at least secondary school and above have a better understanding of the benefits of giving birth in the health facility than women who have little to no education background (Samson 2012). However, in the current study, sur-

prisingly, there was no significant relationship between education and facility delivery. However, this is not unusual, a similar study conducted in Kenya also found no significant association between level of education and delivery in a health facility (Mutiiria, Mbugua & Marwanga 2021).

7. Conclusion

The socio-demographic factors associated with health facility-based childbirth include the mother's age (21 – 25 years), being a full-time student, and working for either government or private business.

Recommendation

Women and their husbands should have a source of income so that they would be able to have transport that expectant mothers can easily take to the hospital. Younger women and old ones should be sensitized to the importance of giving birth to their babies in health centers due to the safety associated with it.

The study also recommends that more message dissemination on facility delivery should be encouraged and perhaps integrated with another regular health massage that the health ministry and partners normally pass out to the community and country.

The study recommends the immediate start of a transport system for expectant mothers who are far away from Yambio State Hospital to be transported to Health facilities for Childbirth. The study also recommends the establishment of functional health facilities for mothers who are far away from Yambio town for Health facility-based childbirth in their respective Payams as well as lessening the waiting time for expectant mothers to access services.

8. Acknowledgement

I wholeheartedly thank all those that provided in one way or the other for the effective achievement of my study to obtain a master's degree in public health. Yours is an important gift that I will live to appreciate and be grateful for forever.

I am deeply grateful to Prof. Wilberforce, and Madam Bandaru Juliet Marion, who from the beginning of the research work, were assigned to me as supervisors and have patiently guided me at every step of this research work. Thank you for the time and effort you put into ensuring that this research project becomes a success.

My dear lecturers at the College of Higher Degrees and Research of Cavendish University, I am thankful, for you made me the kind of person I am today. The expertise and talents implanted in me will be significant for the benefit of my Country South Sudan and beyond.

My dearest friends Mr. Samson Lugala, and Serunjogi David, you are the cause for the accomplishment of this plan. May God shower His blessings on you, and all the plans of your life.

In conclusion, I am indebted to having a passionate and marvelous family that stood beside me throughout my time of struggle. Your meditation for me is now being satisfied, and rest assured that more rewards and blessings will shower upon us All. Mizeredi Monica, Namaku Eveline, Mboridie Josephine, and Kumbaberani David, I love you all. Mborikino Angeline, Luwizia Edward, thanks for marrying me. To God be splendor always and forever more. Amen!

9. List of Abbreviations.(table 2)

Source of funding.

It was self-sponsorship with no external support.

Conflict of interest

The manuscript is written based on the research conducted by the principal researcher and writer for both the manuscript and the thesis as partial fulfilment for the award of a master's degree in public health at Cavendish University Uganda. The questionnaires were developed and reviewed by the supervisors and approved by the Postgraduate department before the actual data collection. There're no benefits related to the development of products by the researcher, but instead, the findings will help the Ministry of Health and the Government of South Sudan to promote health

Table 2: List of Abbreviations

AIDS	Acquired immunodeficiency syndrome infection
ANC	Antenatal care
CUU	Cavendish University Uganda
HF	Health Facility
HIV	Human immunodeficiency virus
INGO	International Non-Governmental Organizations.
IOM	International Organization for Migration
LMIC	Low- and middle-income countries.
MDG	Millennium Development Goals
MMR	Maternal Mortality Rates
MoH	Ministry of Health
MPH	Master of Public Health
PHCC	Primary Health Care Center
PHCU	Primary Health Care Units
PNC	Postnatal care
SBA	Skilled birth attendant
SES	Socio-economic Status
TBA	Traditional birth attendants
UN IME	United Nations Inter-Agency Group for Child Mortality Estimation
WES	Western Equatoria State
WHO	World Health Organizations
YSH	Yambio State Hospital

facility-based childbirth grounded on the recommendation made by this study.

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