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Analysis of Influential Factors on Postnatal Care Utilization: A Community-based Cross-sectional Study in Kwadaso Municipality, Ghana

Sarah Boafowaa Owusu[1)], Richard Abeiku Bonney[2)], Kwame Sarkodie Safo[1)], Samuel Abudey[3)], Randolph Baah Adu[1)], Edward Tieru Dassah[4)]

[1)] Seventh-Day Adventist Hospital, Kwadaso, Kumasi, Ghana
[2)] Department of Health Policy, Management and Economics, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
[3)] School of Public Health, University of Health and Allied Sciences, Ho, Ghana
[4)] Department of Population, Family and Reproductive Health, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

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ABSTRACT

Background: Postnatal care is central to maternal well-being as it averts cognitive complications and illnesses that come from childbirth. Non-utilization of postnatal care hinders initiatives aimed at improving maternal morbidity and mortality because postnatal care is an essential component of those initiatives. This study sought to determine factors associated with the utilization of postnatal care services among mothers in Kwadaso Municipality.
Subjects and Method: Community-based cross-sectional study to assess the factors associated with utilization of postnatal care services among mothers in Kwadaso Municipality. A multistage sampling technique was used to recruit 568 women for the study. The dependent variable was mothers' utilization of postnatal care (PNC). The independent variable was demographic characteristics of mothers, socio-economic status, educational level, accessibility to healthcare facilities, knowledge of PNC Services, and awareness of PNC services. The data were collected using a structured questionnaire, the data obtained were analyzed using STATA version 14.0, and the variables were analyzed using the chi-square test and multiple logistic regression and p=0.050 was considered statistically significant.
Results: The mean age was 20-25 years 22.4 (SD=3.7 years) and 55.5% were married. The level of knowledge of the mothers on postnatal care services was 71.8% and 82.3% of the subjects knew postnatal period is more dangerous to the lives of mothers and their babies. The unadjusted odds of women who were married (OR= 2.11; 95% CI= 0.86 to 7.46; p=0.042), with two children (OR=4.17; 95% CI= 0.03 to 5.30; p= 0.025), earned GHC 500.00 monthly (OR= 3.47; 95% CI= 0.26 to 5.73; p=0.038), or delivered at the hospital (OR= 3.18= 95%CI= 0.02 to 8.06; p=0.014) were statistically significantly higher in women who were not married, had more than or less than four children, earned less than GHC 500.00 or delivered at other places aside the hospital.
Conclusion: This study contributes to the ongoing discourse on maternal health and underscores the importance of evidence-based interventions to improve the health and well-being of mothers and infants.

Keywords: postnatal care, new-born, knowledge, utilization, immunization.

Correspondence:
Richard Abeiku Bonney, Department of Health Policy, Management and Economics, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana. Mobile: +2335-4804-7259. Email: bonneyrichy123@gmail.com.

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BACKGROUND

Maternal health care service usage is important for early diagnosis of maternal morbidity and decrease of maternal mortality throughout pregnancy, as per the World Health Organization. Prenatal and postnatal skilled care may decrease maternal fatalities by almost 74 percent, enhance pregnancy outcomes, and minimize newborn deaths, (Say et al., 2014). Postnatal care (PNC) is a well-known maternal health care service that helps to avoid impairment and disability after childbirth. PNC includes a thorough evaluation of both the mother and the infant, as well as suitable advice for the mother throughout the postpartum period (Dutta, 2014). Every year, three million babies die in their first month of life, accounting for 40% of all children under the age of five, and virtually all of these fatalities occur in poor nations (W.H.O., 2014b). One in nine children dies before the age of five in sub-Saharan Africa, which accounts for more than 16 times higher than the normal number of deaths in advanced countries (Foreman et al., 2018).

PNC is central for the health of the mother as it averts cognitive problems and sickness that come with giving birth (Somefun and Ibisomi, 2016). The use of skilled delivery protects against complications of the mother and the loss of life (Kikuchi et al., 2018). It was advised that 88– 98% of deaths that are associated with pregnancy are avoidable if the women access judicious and effective PNC (Angore et al., 2018). An analysis in 2015 on maternal mortality recognized 303,000 mother deaths globally due to complications related to pregnancy (Alkema et al., 2016). Over two-thirds of deaths occur due to non-usage of PNC services and 62% of these deaths occur in the postnatal period (Angore et al., 2018). Over 50% of these deaths happen on day one (Bhutta et al., 2014).

The mother and baby are at risk specifically in the first 24 hours following delivery. In emerging nations, about two-thirds of maternal deaths occur during the postnatal period (WHO, 2014b). More than half of these fatalities happen in Sub-Saharan Africa, and nearly a third in South Asia, as per WHO (2015). In Africa, 18 million women do not give birth in a health facility which is a problem for planning and executing PNC for mothers and their children (DiBari et al., 2014). In Africa, most mothers and neonates do not visit the health facility following birth, which illustrates that PNC programs are a challenge in Reproductive and Child Health programs (WHO, 2014a).

According to a study conducted by Chembe and Siziya (2017) in Ndola, Zambia showed that 81.3% did not have knowledge of PNC and a larger proportion of women knew not what PNC is about, concerning, the timing of PNC, activities done at postnatal clinic and the importance of using PNC services. Mirzaee et al. (2015) reported that perinatal mothers experience the critical post-delivery period fruitfully if they possess information on PNC.

According to Ahinkorah et al. (2021), PNC services usage in Mali included the administration of vaccinations like BCG, OPV, and hepatitis B vaccines, as well as the

promotion of birth spacing, exclusive breastfeeding practices, and early postnatal contact. In Mali, there was a prevalence of PNC service use of 25.2 percent. Maternal age, educational level of women, employment position of women and husbands, site of delivery, method of birth, number of pregnancies, understanding of obstetric-associated risk signs, and awareness of PNC services were all identified as variables that influence the use of PNC services. Though the factors that influence the usage of PNC services vary by cultural and socioeconomic class within a country, there are certain commonalities (Tesfahun et al., 2014).

This community-based cross-sectional study was conducted to determine factors associated with the utilization of PNC among mothers in Kwadaso Municipality, Ghana. The study's findings will inform policymakers, stakeholders, health management, and health workers on the health-seeking behavior of postpartum to be able to plan appropriate intervention programs for the essence of healthcare from skilled personnel and approved health facilities.

SUBJECTS AND METHOD

1. Study Design

This study employed a community-based cross-sectional research design. Between December 2021 to March 2022, data was collected within the Kwadaso Municipality in the Ashanti Region of Ghana – home to a population of 154,526 (79,321 females) according to the 2021 national population and housing census. Trained research assistants were responsible for administering the questionnaire to the study subjects. The data collection process took place in various locations within the Kwadaso Municipality, covering the different sub-municipals. The research assistants approached potential subjects, explained the purpose of the study, and obtained informed consent before proceeding with the questionnaire.

2. Population and Samples

The study population consisted of 568 women. The sample size was determined through a combination of stratified and random sampling techniques. Stratification was based on the sub-municipals, and within each stratum, subjects were selected using random sampling. This approach ensured the representation of different areas within the Municipality.

Women who had given birth to at least one child, 18 years and above, consented to participate, delivered and lost their child, and reside in one of the chosen enumeration areas. Women who resided outside the study area were excluded.

3. Study Variables

The primary outcome variable of interest was mothers' utilization of PNC services. The independent variables included in the study were demographic characteristics of mothers, socio-economic status, educational level, accessibility to healthcare facilities, knowledge of PNC Services, and awareness of PNC services.

4. Operational Definition of Variables

Mothers' utilization of PNC services was defined as the proportion of mothers who had received PNC services within 48 hours of delivery, calculated based on self-report during the survey.

Socio-demographic characteristics were defined as age, marital status, occupation, parity of the mothers, composite index of household assets, housing conditions, access to basic services, no formal education, primary education, secondary education, and higher education.

Accessibility to Healthcare Facilities was measured by proximity to healthcare centers and transportation facilities, enabling easy access to PNC services.

Awareness of PNC Services was assessed by asking participants if they had information on PNC and the sources.

Knowledge of postnatal care was defined as a minimum of 6 correct responses on the study questionnaire.

5. Study Instruments

A structured questionnaire was developed to collect data from the study subjects. The questionnaire consisted of sections addersing demographic information, socio-economic status, educational level, awareness of PNC services, accessibility to healthcare facilities, and utilization of PNC services.

6. Data Analysis

The data was coded and entered into STATA Version 14.0. The data was analyzed using descriptive statistics (frequency counts, percentages, mean and standard deviation). Chi-square and Logistic Regression Pearson were used to determine the bivariate correlation between variables.

7. Research Ethics

Ethical approval for this study was obtained from the Committee for Human Research, Publication, and Ethics (CHPRE), Kwame Nkrumah University of Science and Technology (Ref. no. CHRPE/AP/560/21). Subjects were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time. Informed consent was obtained from all subjects before data collection. Confidentiality was maintained by using anonymized data and securely storing information.

RESULTS

1. Characteristics of Subjects

From the findings of the study, it showed that 3.9% were aged 18-19 years and 43.1% of the subjects were of age, 20-25 years. The mean age was 20-25 years 22.4 (±SD=3.7 years). On the education level of the women, 44.9% had basic education, 55.5% of the women were married and 33.3% had a child. Also, 66.9% of the subjects were traders, and a little over half (52.1%) of the women earned less than GHC 500.00. The majority (87.7%) of the women were Christians and many (77.9%) of the subjects were Akans and 22.1% were non-Akans. Furthermore, 50.9% travel 30mins and more to health facilities, and 49.1% travel less than 30mins. Moreover, 38.9% of their partners had secondary education, 28.3% had tertiary education and 2.9% did not have formal education. The majority (82.2%) delivered at the Hospital and 4.6% of the women delivered at home. Most (93.0%) of the women were attended to by Doctor/Midwife during delivery and 76.6% had a vaginal delivery (Table 1).

Table 1. Background characteristics of subjects

Variable	Frequency (N=568)	Percentage (%)
Age group		
18-19	22	3.9
20-25	245	43.1
26-30	153	26.9
31-35	80	14.1
36-40	42	7.4
40+	26	4.6
Level of Education		
No formal education	32	5.6
Basic	255	44.9
Secondary	198	34.9
Tertiary	83	14.6
Marital status		
Single	78	13.7

Variable	Frequency (N=568)	Percentage (%)
Married	315	55.5
Separated	12	2.1
Divorced	8	1.4
Cohabiting	155	27.3
Parity		
1	189	33.3
2	174	30.6
3	126	22.2
4	53	9.3
4+	26	4.6
Occupation		
Trader	380	66.9
Health worker	21	3.7
Teacher	58	10.2
Farmer	6	1.1
Unemployed	103	18.1
Income GHS		
Less than 500.00	296	52.1
500.00 and more	272	47.9
Religion		
Christians	498	87.7
Muslims	49	8.6
Traditional	21	3.7
Ethnicity		
Akan	443	77.9
Ewe/Ga	49	8.7
Dagomba	21	3.7
Others	55	9.7
Travel time (minutes)		
Less than 30	279	49.1
30 and more	289	50.9
Partners education		
No formal education	17	2.9
Basic	170	29.9
Secondary	221	38.9
Tertiary	160	28.3
Place of delivery		
Home	26	4.6
CHPS Compound	8	1.4
Health Centre	28	4.9
Clinic	37	6.5
Hospital	467	82.2
TBA	2	0.4
TBA	11	1.9
Community Health Worker	15	2.6
Midwife/Doctor	528	93.0
Relative	14	2.5
Mode of delivery		
Vaginal delivery	435	76.6
Caesarean section	133	23.4

2. Knowledge of Postnatal Care

The level of knowledge of the mothers on PNC services was 71.8%. The majority (91.9%) knew mother and baby should go to the health facility for PNC services. Most (82.3%) of the subjects knew post-delivery period is more harmful to mothers and babies. Many (89.6%) knew PNC services were available in the health facility and less than half (45.6%) of the subjects knew the correct time to start PNC. A majority (91.2%) said PNC services minimize morbidity and mortality of mothers. More than half (69.4%) said PNC is rendered immediately after birth. A little over half (54.0%) said healthcare workers do not come for home visits. About half (50.9%) knew postnatal examination was done as early as possible, preferably within 24 hours. (Table 2).

Table 2. Knowledge of postnatal care

Subjects' knowledge of PNC	Yes (%)	No (%)	Don't know (%)
Mother and baby should go to the health facility for PNC	522 (91.9)	35 (6.2)	11 (1.9)
Post-partum period is more harmful to the life of the mothers and their babies	468 (82.3)	71 (12.5)	29 (5.2)
Postnatal care services is available at the health facility	509 (89.6)	30 (5.3)	29 (5.1)
The correct time to start PNC	259 (45.6)	153 (26.9)	156 (27.5)
PNC service minimizes the morbidity and mortality of mothers	518 (91.2)	27 (4.8)	23 (4.0)
PNC is rendered immediately after birth	394 (69.4)	35 (6.2)	139 (24.4)
Health workers come for home visit for PNC three days after birth	97 (17.1)	307 (54.0)	164 (28.9)
Postnatal examination is done as early as possible, preferably within 24 hours	289 (50.9)	79 (13.9)	200 (35.2)

3. Knowledge of PNC Services for Mothers

The results show a larger proportion (90.5%) said, there are examinations on possible postpartum complications. Most (94.1%) of the subjects said the newborns are examined and 89.4% indicated immunization services are provided during PNC. Also, more than half (75.9%) said family planning services are provided, 84.6% said advice is given on danger signs after delivery and 90.8% said there is advice on nutrition to the mothers during PNC. Many (88.0%) said they are advised on hygiene care and a majority (92.6%) further stated there is advice on breastfeeding practices. The majority (80.6%) said counseling is provided and more than half (69.9%) indicated mosquito nets are not distributed to them during PNC, 67.9% indicated there is no provision of SP during PNC and 76.9% said, there is no requisition of ultrasound scan during PNC services. (Table 3).

Table 3. Knowledge of PNC Services

Subjects' knowledge of postnatal care services	Yes (%)	No (%)	Don't know (%)
The mother is examine on possible postpartum complications	514 (90.5)	44 (7.7)	10 (1.8)
Examination of the new-born	535 (94.1)	29 (5.1)	4 (0.8)
Immunization services is provided at PNC services	508 (89.4)	47 (8.3)	13 (2.3)

Family planning service is provided at PNC services	431 (75.9)	117 (20.6)	20 (3.6)
Danger signs after delivery is thought at PNC	464 (84.6)	70 (12.8)	14 (2.5)
Advice on nutrition is given	516 (90.8)	47 (8.3)	5 (0.9)
Advice on hygiene care is rendered	500 (88.0)	61 (10.7)	7 (1.3)
Advice on breastfeeding practice	526 (92.6)	40 (7.0)	2 (0.4)
Counselling	458 (80.6)	94 (16.5)	16 (2.9)
Distribution of mosquito net	155 (27.3)	397 (69.9)	16 (2.8)
Provision of Sulphadoxine-Pyrimethamine (SP) tablet to swallow	84 (14.8)	386 (67.9)	98 (17.3)
Midwives request for ultrasound	102 (17.9)	437 (76.9)	29 (5.2)

4. Awareness of PNC Services

A large number of subjects (86.8%) indicated having information on PNC services and the majority (79.0%) of the subjects had their information from the midwife, 11.3% had it from the media and 9.7% from friends/relatives. More than half (58.8%) said they go for PNC 7-14 days of childbirth, 11.8% go to PNC during the first 24 hours, 13.9% said as early as 48-72 hours and 2.6% said after 6 weeks of childbirth. (Table 4).

Table 4. Awareness of PNC Services

Variable	Frequency	Percentage (%)
Information on PNC Services		
Yes	493	86.8
No	75	13.2
Sources of information		
Midwife	449	79.0
Media	64	11.3
Friends/ Relatives	55	9.7
PNC visit		
First 24 hrs.	67	11.8
As early as 48-72 hrs.	79	13.9
7-14 days	334	58.8
At 6 weeks	72	12.7
After 6 weeks	16	2.8

5. Utilization of PNC

The majority (82.8%) of mothers use PNC services and 17.2% do not utilize PNC. More than half (68.1%) of the subjects said they were not given an appointment for PNC. Many (75.4%) of the mothers used public transport for PNC and 13.2% of the subjects walked on foot to the health facility for PNC. Most (92.4%) of the subjects had respect from the healthcare workers. The majority (93.7%) of the women said privacy was provided, the majority (90.3%) of the women were satisfied with the services provided and 9.7% were unsatisfied with the services at the PNC. More than half (63.2%) of the subjects had gone to PNC once and 25.7% had gone there twice. The majority (85.2%) of the women go to PNC at the Hospital and 73.8% said healthcare workers did not visit them at home (Table 5).

Table 5. Utilization of postnatal care services

Variable	Frequency	Percentage (%)
Use of postnatal care		
Yes	470	82.8
No	98	17.2

Variable	Frequency	Percentage (%)
Appointment for PNC		
Yes	181	31.9
No	387	68.1
Means of transport to PNC center		
On foot	75	13.2
Private car	58	10.2
Motorcycle	7	1.2
Public Transport	428	75.4
Attitude of health care providers		
Yes	525	92.4
No	43	7.6
Privacy		
Yes	532	93.7
No	36	6.3
Assess the PNC service		
Satisfied	513	90.3
Unsatisfied	55	9.7
Number of times for PNC		
None	27	4.8
Once	359	63.2
Twice	146	25.7
Thrice	22	3.9
Four	14	2.4
Place for PNC		
None	22	3.9
CHPS	10	1.8
Health Centre	16	2.8
Clinic	36	6.3
Hospital	484	85.2
Health workers visit		
Yes	149	26.2
No	419	73.8

6. Barriers to Utilization of Postnatal Care Services

The findings showed that 82.5% showed that culture/religion allows them to go out during puerperium and the majority (71.1%) indicated the attitude of the health providers deters them from going for PNC services. Many (80.3%) of the subjects said the availability of money allows them to go for PNC services. Furthermore, 88.6% said, their health allows them to attend PNC services. A little over half (51.4%) said, that waiting for the baby's cord stump to fall deters them from going for PNC services and 68.7% indicated long waiting hours were not a barrier for PNC Services. The majority (81.5%) said distance was not a barrier to them going for PNC services. More than half (69.7%) said they do not fear evil powers attacking them and the baby. Moreover, 81.8% of the mothers said family size allows them to go for PNC services and the majority (85.5%) said their job does not deter them from going for PNC. A majority (75.2%) of the women said the outcome of birth interests them to go for PNC services (Table 6).

Table 6. Barriers to Utilization of Postnatal Care Services

Barriers to utilization of postnatal care services	Yes (%)	No (%)	Don't know (%)
Culture/ Religion allow you to go out during puerperium	469 (82.5)	88 (15.5)	11(2.0)
Attitude of the health providers deter you of going for PNC Services	154 (27.1)	404 (71.1)	10 (1.8)
Availability of money allows you to go for PNC services	456 (80.3)	92 (16.2)	20 (3.5)
My health allowed me attend PNC services	503 (88.6)	62 (10.9)	3 (0.5)
Waiting for baby's cord stump to fall deters you of going for PNC Services	292 (51.4)	260 (45.7)	16 (2.9)
Long waiting hours interests you to go for PNC Services	390 (68.7)	174 (30.6)	4 (0.7)
Distance allows you to go for PNC service	463 (81.5)	102 (18.0)	3 (0.5)
The fear of evil powers of attacking you and the baby prevents you from PNC	164 (28.9)	396 (69.7)	8 (1.4)
The size of the family allows you to go for PNC services	465 (81.8)	94 (16.6)	9 (1.6)
Job allows you to go for PNC Services	486 (85.5)	71 (12.5)	11(2.0)
The possession of Health Insurance makes you go for PNC Services	456 (80.2)	106 (18.7)	6 (1.1)
The outcome of birth interest you to go for PNC Services	427 (75.2)	108 (19.0)	33 (5.8)

7. Factors Influencing Postnatal Care Services

The findings from the study indicated that the marital status, (p=0.013) parity of the mothers, (p=0.041) and income of the mothers (p=0.023) were related to the utilization of PNC services. In addition, the travel time to the center, (p=0.015) place of delivery, (p=0.027) delivery attendant, (p=0.016) mode of delivery, (p=0.037) and information on PNC (p= 0.045) had an association with the utilization of PNC services (Table 7).

Table 7. Factors influencing utilization of postnatal care services

Variable	Utilize (%)	Not utilize (%)	95% CI	p
Age group			0.06 to 0.09	0.082
18-19	18 (3.2)	4 (0.7)		
20-25	144 (25.4)	101 (17.8)		
26-30	107 (18.8)	46 (8.0)		
31-35	58 (10.2)	22 (3.9)		
36-40	24 (4.2)	18 (3.2)		
40+	16 (2.8)	10 (1.8)		
Education level			0.04 to 0.07	0.064
No formal education	20 (3.5)	12 (2.1)		
Basic	145 (25.5)	110 (19.4)		
Secondary	106 (18.7)	92 (16.2)		
Tertiary	56 (9.9)	27 (4.7)		
Marital status			0.00 to 0.03	0.013
Single	58 (10.2)	20 (3.5)		

Variable	Utilize (%)	Not utilize (%)	95% CI	p
Married	203 (35.7)	112 (19.7)		
Separated	8 (1.4)	4 (0.7)		
Divorced	6 (1.1)	2 (0.4)		
Cohabiting	108 (19.0)	47 (8.3)		
Parity			0.02 to 0.07	0.041
1	110 (19.4)	79 (13.9)		
2	99 (17.4)	75 (13.2)		
3	81 (14.3)	45 (7.9)		
4	37 (6.5)	16 (2.8)		
4+	18 (3.2)	8 (1.4)		
Occupation			0.15 to 0.43	0.215
Trader	222 (39.1)	158 (27.8)		
Health worker	6 (1.1)	15 (2.6)		
Teacher	37 (6.5)	21 (3.7)		
Farmer	2 (0.4)	4 (0.8)		
Unemployed	58 (10.2)	45 (7.8)		
Income GHC			0.00 to 0.03	0.023
Less than 500.00	170 (29.9)	126 (22.2)		
500.00 and more	124 (21.8)	148 (26.1)		
Religion			0.05 to 0.09	0.076
Christians	284 (50.0)	214 (37.8)		
Muslims	34 (5.9)	15 (2.6)		
Traditional	13 (2.3)	8 (1.4)		
Ethnicity			0.58 to 0.84	0.683
Akan	261 (45.9)	182 (32.0)		
Ewe/Ga	29 (5.1)	20 (3.6)		
Dagomba	12 (2.1)	9 (1.6)		
Others	36 (6.3)	19 (3.4)		
Travel time (minutes)			0.00 to 0.03	0.015
Less than 30	161(28.5)	118 (20.9)		
30 and more	198 (34.6)	91 (16.0)		
Partners education			0.04 to 0.09	0.068
No formal education	10 (1.8)	7 (1.2)		
Basic	87 (15.3)	83 (14.6)		
Secondary	123 (21.6)	98 (17.4)		
Tertiary	124 (21.8)	36 (6.3)		
Place of delivery			0.00 to 0.04	0.027
Home	8 (1.4)	18 (3.2)		
CHPS Compound	5 (0.9)	3 (0.5)		
Health Center	19 (3.3)	9 (1.6)		
Clinic	30 (5.3)	7 (1.2)		
Hospital	412 (72.5)	55 (9.7)		
TBA		2 (0.4)		
Delivery attendant			0.00 to 0.03	0.016
TBA		11(1.9)		
Community Health Worker	12 (2.1)	3 (0.5)		
Midwife/Doctor	480 (84.3)	48 (8.5)		

Variable	Utilize (%)	Not utilize (%)	95% CI	p
Relative	8 (1.4)	6 (1.3)		
Mode of delivery			0.02 to 0.05	0.037
Vaginal delivery	260 (45.8)	175 (30.8)		
Caesarean section	94 (16.5)	39 (6.9)		
Appointment for PNC			0.06 to 0.20	0.091
Yes	85 (14.9)	96 (16.9)		
No	229 (40.4)	158 (27.8)		
Information on PNC			0.02 to 0.06	0.045
Yes	311 (54.7)	182 (32.0)		
No	60 (10.7)	15 (2.6)		

8. Logistic regression of factors influencing the utilization of postnatal care services

The study showed the odds of women who were married were 2.1 times more likely to utilize PNC services than those who were not married (OR=2.11; 95% CI= 0.86 to 7.46; p=0.042). The odds of PNC service usage among women with two children were 4.2 times higher than those who had four children (OR=4.17; 95% CI= 0.03 to 5.30; p=0.025). The results also showed that the odds of PNC service utilization among women who earned GHC 500.00 and more were 3.5 times than those who earned less than GHC 500.00 (OR= 3.47; 95% CI= 0.26 to 5.73; p=0.038). In the study, the odds of PNC service utilization among women who delivered at the hospital were 3.2 times more than those who delivered at home [OR=3.18; 95% CI= 0.02 to 8.06; p=0.014]. (Table 8).

Table 8: Logistic regression of factors influencing the utilization of PNC

Variable	OR	95% CI	p
Marital status			
Married	2.11	0.86 to 7.46	0.042
Single		1.00	
Separated	3.01	1.36 to 9.01	0.791
Divorced	2.28	0.60 to 5.12	0.337
Cohabiting	1.92	0.06 to 2.14	0.063
Parity			
1	1.21	0.03 to 3.34	0.228
2	4.37	0.03 to 5.30	0.025
3	1.20	0.11 to 3.43	0.029
4	2.56	0.01 to 3.11	0.543
4+		1.00	
Income GHC			
Less than 500.00		1.00	
500.00 and more	3.47	0.25 to 5.73	0.038
Travel time (minutes)			
Less than 30	2.32	0.21 to 4.02	0.051
30 and more		1.00	
Place of delivery			
Home	1.20	0.37 to 2.94	0.124
CHPS Compound	1.21	0.23 to 7.69	0.765
Health Centre	0.84	0.14 to 5.16	0.853
Clinic	1.18	0.21 to 6.71	0.861
Hospital	3.18	0.02 to 8.06	0.014

Variable	OR	95% CI	p
TBA		1.00	
Delivery attendant			
TBA		1.00	
Community Health Worker	1.95	1.12 to 3.48	0.953
Midwife/Doctor	4.56	1.29 to 11.27	0.021
Relative	2.91	0.62 to 3.25	0.078
Mode of delivery			
Vaginal delivery	3.74	0.94 to 6.32	0.023
Caesarean section		1.00	
Information on PNC			
Yes	4.93	1.59 to 9.51	0.015
No		1.00	

DISCUSSION

The study findings underscore a significant depth of knowledge among women regarding various aspects of postnatal care (PNC) services. Their awareness spans essential components such as the timing for commencing PNC, attending PNC with the newborn, and acknowledging the role of PNC in reducing maternal morbidity and mortality. These findings resonate with prior research, notably Sarkar et al. (2014), who reported comparable understanding among mothers regarding facets of postnatal care, including the value of postnatal check-ups, newborn vaccination, cord care, and weight monitoring. An overwhelming majority of subjects (90.5%) highlighted the inclusion of assessments for potential postpartum complications, and 94.1% recognized the significance of evaluating the newborn during PNC. Moreover, a consensus emerged regarding the availability of immunization services and family planning provisions within PNC. Notably, 75.9% affirmed the presence of family planning services. Additionally, the women confirmed the receipt of counsel on post-delivery danger signs and nutritional advice, underlining the comprehensive nature of the PNC services provided. Corroborating this, Chemir et al. (2018) reported similar observations among women in Oromiya, Ethiopia, indicating a parallel recognition of PNC offerings, encompassing physical examinations, family planning, and vaccination services. Similarly, Berhanu Sr et al. (2016) emphasized the quality of PNC provided by healthcare workers, revealing that while some mothers received only contraceptive services, a smaller proportion benefited from more comprehensive PNC, including risk assessment, physical examinations, and health promotion.

As advocated by the World Health Organization (WHO., 2014a), perinatal care plays a pivotal role in identifying deviations from expected recovery after birth and intervening promptly. The study's insights underscore the vulnerability of mothers and newborns during the early neonatal period, reinforcing the imperative to educate mothers about delivery-associated risks and deliver requisite care. However, a notable limitation emerged from the study—healthcare workers did not conduct home visits. While home visits from qualified attendants could enhance post-delivery follow-up and provide immediate care, the absence of such visits may deprive mothers and infants of valuable guidance and interventions. In this context, community health worker visits hold the potential to ensure holistic care while disseminating crucial health messages (Warren, 2015; Beraki et al., 2020). The data further revealed that the majority of subjects

acquired PNC information from midwives (79.0%), followed by the media and friends/ relatives. This finding is similar to other studies which reported that mothers have heard about PNC services after delivery (Belachew et al., 2016; Chemir et al., 2018; Abera et al., 2020). This diversified information dissemination with key sources coming from health professionals reflects the multifaceted approaches that contribute to women's awareness of PNC services.

Regarding utilization, the study discovered a high proportion (82.8%) of mothers availing of PNC services, outpacing figures from analogous studies in various regions including Uganda (50%) (Ndugga et al., 2020), Nigeria (5.8%) (Dairo and Atanlogun, 2018), North West Ethiopia (57.5%) (Wudineh et al., 2018) as well as Northern Ghana (62%) (Sakeah et al., 2018). The subjects' substantial utilization of PNC is noteworthy and can be attributed to sustained efforts promoting maternal health care services within the municipality. While the majority of women reported positive experiences and satisfaction with PNC services, challenges persisted. The absence of home visits and counseling in remote rural settings emerged as a significant barrier to service utilization. This echoes earlier research, emphasizing the pivotal role of community health worker outreach and home visits in encouraging PNC utilization (Belachew et al., 2016; Chemir et al., 2018).

Most of the mothers (75.4%) used public transport for PNC and few (13.2%) of the women walked on foot to the health facility for PNC in this current study. This finding is similar to the findings of Abera et al. (2020) who also reported that the majority of the women used public transport as a means to the health facility while few walked to the facility. The use of public transport could be explained that the women had easier access to public transport than the other means of transportation. The provision of a positive attitude (92.4%) and privacy (93.7%) from healthcare providers could influence the satisfaction of PNC services (90.3%). This is similar to the findings of Abera et al. (2020) and Belachew et al. (2016) who also reported that mothers shared on healthcare providers respecting, and upholding their privacy and confidentiality. Tolera et al. (2020) also reported on low attendance and satisfaction in rural Ethiopia; 26.2% of the women visited the PNC facility once, and 8.3% visited the place twice.

In Africa, traditional ideas and cultural practices around the care of perinatal women and their new-born infants are deeply ingrained, and they often have a detrimental impact on the use of PNC services, with research finding that women delay obtaining treatment or do not seek it at all (Ayanore et al., 2016; Rwabufigiri et al., 2016) This is contrasting in this current study, majority (82.5%) of the women indicated that culture/ religion allows them to go out during puerperium. Another significant finding is the association between birth outcomes and PNC utilization. The study demonstrates a direct link between positive birth outcomes and an increased likelihood of seeking PNC services, corroborating the findings of Wudineh et al. (2018). This highlights the pivotal role of favorable birth experiences in motivating mothers to engage with PNC services and underscores the potential for positive birth outcomes to catalyze improved maternal and neonatal health.

The study identified that family size plays a role in enabling PNC service utilization echoes the findings of Abera et al. (2020), emphasizing the importance of familial support in driving maternal healthcare-seeking behavior. This insight underscores the need for targeted interventions

that leverage family dynamics to enhance PNC utilization. The study examined the complex relationship between sociodemographic variables and PNC utilization. The study highlights the association between factors such as income, marital status, parity, travel time, place of delivery, delivery attendant, mode of delivery, and information on PNC. These insights resonate with the notion that these variables are influenced by cultural and social class distinctions, underscoring the need for context-specific approaches to improving PNC utilization (Tesfahun et al., 2014).

Study Ahinkorah et al. (2021) discuss the relationship between utilization of perinatal care (PNC) services and various characteristics, such as maternal education, health insurance, job status, media exposure, residential area, and community education level. Berhanu et al. (2016) emphasize the impact of factors like educational status, pregnancy status, antenatal care (ANC), site of delivery, provider advice, previous PNC history, and discharge duration on PNC use. Appiah et al. (2021) find that age, religion, ethnicity, marital status, and region significantly predict early PNC utilization in Ghana. In Uganda, Ndugga et al. (2020) identified women's education, wealth, employment, ANC attendance, delivery location, perceived distance to health facilities, and media access as key determinants of early PNC. The present study uncovers divergent factors influencing PNC utilization across different study populations. Findings highlight critical elements for guiding health workers' sensitization efforts in perinatal care. Particularly, mothers' information about PNC through health workers, often midwives or doctors involved in delivery, positively impacts attendance due to the trust in the accuracy of the information and the opportunity for meaningful discussions about maternal and newborn health.

Parity emerges as a significant factor, with mothers of two or three children more likely to attend PNC. This contradicts Khaki (2019), where mothers with multiple births exhibited lower PNC attendance compared to those with single births. Moreover, income's connection to PNC use is evident, as mothers earning GHC 500.00 or more tend to access services comfortably. Socioeconomic status affects utilization, with financially stable households having better access, while lower-income women often prioritize income generation over post-delivery care. Delivery at health facilities, as highlighted by Wudineh et al. (2018), is found to influence PNC utilization. Mothers delivering at health facilities are more likely to utilize PNC due to the associated educational opportunities and enhanced access to services.

The study has limitations with self-reported data could lead to recall bias, and the cross-sectional design limits causal inference. Despite these limitations, the study contributes to understanding PNC utilization, emphasizing the need for future research with diverse sampling, longitudinal designs, qualitative exploration, and comprehensive confounder analysis. The findings of this study contribute valuable insights to the body of knowledge on factors influencing the utilization of postnatal care services. The high level of awareness and utilization observed within the Kwadaso Municipality is promising, but efforts must be directed toward overcoming barriers and optimizing facilitators to ensure that all mothers and newborns receive the care they need during this critical period. Ultimately, this study contributes to the ongoing discourse on maternal health and underscores the importance of evidence-based interventions to improve the health and well-being of mothers and infants.

AUTHOR CONTRIBUTION

Sarah Boafowaa Owusu, Edward Tieru Dassah, and Richard Abeiku Bonney conceived and designed the study. Sarah Boafowaa Owusu, Kwame Sarkodie Safo, and Richard Abeiku Bonney funded the study. Richard Abeiku Bonney, Sarah Boafowaa Owusu, and Kwame Sarkodie Safo carried out the field/recruitment surveys. Richard Abeiku Bonney and Kwame Sarkodie Sarfo did the data curation and formal analysis. The project administration was overseen by Edward Tieru Dassah, Sarah Boafowaa Owusu, and Richard Abeiku Bonney. Edward Tieru Dassah, Sarah Boafowaa Owusu, and Richard Abeiku Bonney supervised and validated the study. The first and original manuscript draft preparation was done by Richard Abeiku Bonney. Review and editing of the manuscript draft were done by Edward Tieru Dassah, Richard Abeiku Bonney, Kwame Sarkodie Sarfo, and Sarah Boafowaa Owusu. All authors read and approved the final manuscript.

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CONFLICT OF INTEREST

There is no conflict of interest in this study.

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