scientific reports

Check for updates

OPEN

Factors associated with unplanned pregnancy among pregnant women in Uganda

Fredrick Makumbi[2], Peter Ssebadduka[3], Milton Musaba[3], Julius Wandabwa[1,2] & Paul Kiondo[4]✉

Unplanned pregnancies significantly contribute to maternal morbidity and mortality especially in settings where the abortion law is restrictive. This study aimed to establish the prevalence and factors associated with unplanned pregnancy among women attending antenatal clinic in Uganda. This cross-section study was carried out from 31st January to 30th June 2023 at Kawempe national referral hospital in Uganda. Three hundred and eighty-four pregnant mothers gave information on socio demographic, health system and family planning factors. Bivariate and multivariable logistic regression was done to determine the factors associated with unplanned pregnancy. The prevalence of unplanned pregnancy was (130/384) 34%. Unplanned pregnancy was associated with: age 20–24 years (AOR;2.8, 95%CI:1.4–5.8) and 25–34 years (AOR = 3.9,95%CI = 2.6–10.2), urban dwelling (AOR = 3.9,95%CI = 2.2–7.5) monogamy (AOR = 3.6,95%CI = 2.1–6.9), jobless women (AOR = 4.2,95%CI = 2.4–8.9) spouse in an informal sector (AOR = 2.8,95%CI = 1.7–4.5) lack of family planning communication (AOR = 2.3,95%CI = 1.4–5.4), single women (AOR = 0.4,95%CI = 0.2–0.8), income of Uganda shillings ≥ 200,000 (AOR = 0.3,95%CI = 0.1–0.6) and Seventh day Adventist belief (AOR = 0.2,95%CI = 0.09–0.6). There was a high prevalence of unplanned pregnancy in this tertiary hospital, associated with maternal age, place of residence, family type, employment status, not discussing about family planning among spouses, marital status, family income and being of Seventh Day Adventist faith. A community-based study in both urban and rural settings is recommended.

Keywords Unplanned pregnancy, Kawempe, Uganda

Background

Planning a pregnancy is one of the tenets in women's reproductive life and guarantees a safe and healthy pregnancy for the mother-baby pair[1]. In spite this, many women all over the world are not aware of the benefits of a planned pregnancy[2]. Some of the factors that put women at risk of unplanned pregnancy include non-use of modern methods of contraception and uncertainty about their fertility intentions[3]. Unplanned pregnancy is a pregnancy which is either mistimed (occurring earlier than needed) or unwanted (when no more children are needed)[3]. It is a major public health problem worldwide for the women and their families. It is a risk factor for unsafe abortions and other reproductive health problems especially in low- and middle-income countries where abortion laws are still very restrictive[4]. The costs of unplanned pregnancy are immense and put a lot of strain on the already weak health systems and family incomes[5].

The prevalence of unplanned pregnancy is high especially in sub-Saharan Africa and South Asia. Globally, (85 million) 38% of all pregnancies are unplanned with sub-Saharan Africa accounting for (24.1 million) 49.8%[6,7]. This has contributed greatly to maternal mortality, for example in 2020, globally, approximately 287,000 women died due to complications during pregnancy and childbirth. Sub-Saharan Africa alone was responsible for (202,000) 70% while south Asia accounted for (47,000) 16% of these deaths in the same year[8,9]. Due to the magnitude of this problem and adverse outcomes, unplanned pregnancy has become pivotal in the field of family planning in research and in the countries planning programmes.

[1]Department of obstetrics and gynecology, School of medicine, Makerere University College of Health Sciences, Kampala, Uganda. [2]Department of Obstetrics and Gynaecology, Kawempe national referral hospital, Kampala, Uganda. [3]Faculty of Health Sciences, Department of Obstetrics and Gynaecology, Busitema University, Mbale, Uganda. [4]Department of Obstetrics and Gynecology, College of Health Sciences, Makerere University, Kampala, Uganda. ✉email: kiondop@yahoo.com

Globally there is a decline in the unplanned pregnancy rates due to increased access and use of contraception. However, this reduction is less in low- and middle-income countries due to the low contraceptive prevalence rates and the high unmet need for family planning. The burden of unplanned pregnancy varies widely. It highest in Africa (101per 1000 women) and lowest in North America (42 per 1000 women)[10,11]. There is a variation within Africa with the highest rates in East Africa (116 per 1000 women)[6]. The variations in the unplanned pregnancy rates mirror the differences in the unmet need for contraception, the contraceptive prevalence rates as well as differences in the socio-cultural factors which impact women's reproductive options. In Uganda, approximately (535,000) 44.5% of pregnancies are unplanned and about 4–6 maternal deaths which occur daily are attributed to unsafe abortion. Notwithstanding the Government policy in Uganda on family planning 2030 commitment, one in five women of reproductive age have unmet need for family planning and only four out ten women of reproductive age are using any form of contraception[8].

The risk factors for unplanned pregnancy are diverse and extends over disciplines such as health care (poor access to sexual health services and contraceptives), sexual education (inadequate knowledge about sexual health and contraception), religious and cultural factors (beliefs that do not support contraceptive use), sexual abuse (women experiencing intimate partner violence), partner influence (opposition by spouse about the use of contraception and family planning) and poor communication (lack of communication by partner about contraception)[3,12]. Knowing modifiable risk factors is vital in tailoring intervention towards preventing unplanned pregnancy.

[8]. Most studies on unplanned pregnancy Uganda have used secondary data. This study aimed to establish the prevalence and factors associated with unplanned pregnancy at a national referral hospital in Uganda.

Methods

Study design and setting

This cross sectional study was carried out from 31 January to 30 June 2023 at Kawempe national referral hospital(KNRH).KNRH is a National referral hospital in Uganda and a teaching hospital for Makerere University College of Health Sciences. The hospital offers gynaecological, diagnostic, and paediatric services. The study was conducted at the antenatal clinic of the hospital. Approximately 2300 women attend antenatal clinic every month at the hospital.

Study population

Pregnant women who had come to the attend antenatal clinic were included in the study. They were 20weeks of gestation or more. Women who were very sick or had intrauterine foetal death were excluded.

Sample size Estimation

The sample size was calculated using Kish Leslie formula for a single proportion. We assumed that the proportion of unplanned pregnancy to be 43.5% as was found in a study in Uganda[8]. With 80% power and 95% confidence interval, a sample size of 384 mothers was found to be adequate.

Study procedure

The antenatal clinic register was used to identify mothers who had come to attend the clinic. The first mother was selected randomly from the register and thereafter every sixth mother was selected using systematic sampling until the sample size was achieved. If the selected mother was not eligible, the next available mother was selected. The women were checked for eligibility by the research assistants and this was confirmed by the Principal investigator. The eligible women were informed about the study by the research assistants and there after the mother gave a written informed consent.

Data collection, management and analysis

Data were collected using an interviewer administered questionnaire. Information on socio demographic factors, socio economic factors, health system factors, access to health information and whether the women had planned the pregnancy was collected from the women. The outcome of interest was unplanned pregnancy. Unplanned pregnancy was measured using the London Measure of Unplanned pregnancy (LMNUP)[13]. LMNUP scale has six items (timing of pregnancy, desire of pregnancy, partners desire for pregnancy, preparation for pregnancy, contraception and intention to conceive) with a score of 0 to 12. Women who scored 9 and below were taken to have an unplanned pregnancy.

Data were entered in Epidata version 4.2 and exported to Stata version 14 for analysis. Continuous variables were summarized as means with standard deviation and categorical variables summarized as frequencies and percentages. Chi-square test was used to compare the outcome variable with each independent variable. Results are presented as crude odds ratios with 95% Confidence intervals. Variables with a p value of ≤ 0.2 at bivariate analysis were selected for inclusion in the multivariable model for analysis. Forward elimination method was used until a stable model was obtained.

Ethical considerations

Permission to conduct the study was obtained from the Institutional Review Board of the School of Medicine, Makerere University (Mak-SOM-REC-2022-482) and the administration of Kawempe national referral hospital. Informed consent was obtained from the participants. All the questionnaires were anonymized and no names were entered in the database. All the methods were performed in accordance to the relevant guidelines and regulations.

Results

The prevalence of unplanned pregnancy in this study was (130/384) 34%. The demographic characteristics of participants are presented in Table 1.

The health system factors and access to services and family planning information of the participants are presented in Table 2.

Most mothers received information about family planning from health facilities, decided by themselves for the method of family planning to use and were paying for the family planning services. (see Table 2)

Factors associated with unplanned pregnancy are shown in Table 3.

Factors independently associated with unplanned pregnancy were: age 20–24, age 25–34 years, being of SDA faith, being single, living in urban setting, being in monogamous relationships, having income of 200,000 and above, being unemployed, participants whose partners were working in an informal sector and participants who had not discussed with their husbands about family planning. Details are in Table 3.

Discussion

This study evaluated the burden and predictors of unplanned pregnancy among pregnant women at National referral hospital in Uganda. The prevalence of unplanned pregnancy in this study was high. Almost one third of the women reported that their pregnancy was unplanned and one fifth of the women were not using a modern method of family planning at the time of conception. This study is in agreement with studies done in Ethiopia, Uganda and Kenya[8,14,15]. However, this finding is in contrast with the Cape town study in South Africa in which more than half the women had unplanned pregnancy[16]. This high rate of unplanned pregnancy is due to low contraceptive prevalence rate and high unmet need of contraception in these populations. Many women are not sure when to resume sexual intercourse and contraception after child birth[17]. Other women delay hormonal contraception because of breastfeeding and because comorbidities like hypertension. Hormonal contraception has been shown to affect the quality of breast milk in first six weeks after delivery[18]. As a result, women who resume sex early are more likely to have unplanned pregnancy.

In this study, the sociodemographic factors associated with unplanned pregnancy were women's age, place of residence, marital status, socioeconomic status and religion. Women aged 20 to 24 years and 25 to 34 years had increased odds of having an unplanned pregnancy than women aged < 20 years. This is consistent with a study done in Malawi[19] but differed from a study done in Nigeria[20]. This finding is surprising as adolescents are less likely to seek reproductive health care services and have insufficient family planning knowledge[21].

It was surprising that pregnant women from the urban dwelling were more likely to have unplanned pregnancy when compared to pregnant women from rural areas. This is consistent with a studies in Bangladesh and Angola but was consistent with a study in Uganda[2,8,22]. Staying in an urban area does not necessarily make

Factor		*N* (%)
Age (years)	< 20	27(7.0)
	20–24	80(20.8)
	25–34	223(58.1)
	≥ 35	54(14.1)
Religion	Catholic	115(30.2)
	Moslem	112(29.3)
	Anglican	77(20.1)
	Born again	68(17.7)
	SDA	11(2.5)
Marital status	Married	361(94.0)
	Single	23(6.0)
Residence	Rural	101(26.3)
	Urban	283(73.7)
Polygamous family	No	283(73.7)
	Yes	101(26.3)
Monthly income	< 200,000	237(61.7)
	≥ 200,000	147(38,3)
Employment status (woman)	Employed	177(46.1)
	Unemployed	207(53.9)
Partner's occupation	Formal sector	110(28.6)
	Informal sector	274(71.4)
No of children	0	120931.3)
	1–2	146(38.0)
	≥ 3	118(30.0)

Table 1. Demographic characteristics of the participants.

Variable		Frequency	Percentage
Source of information on Family planning	Health facility	290	75.5%
	Friends	42	11.0%
	Mass media (Television and radio)	52	13.5%
Decision maker on method of F/P to use prior to the current pregnancy	Friend	23	9.6%
	Health worker	24	18.8%
	Her self	235	71.6%
Distance from residence to family planning clinic	Less than 2 km	230	59.9%
	2–5 km	86	22,4%
	Over 5 km	68	17.7%
Expenses on family planning services offered	Yes	202	56.6%
	No	182	47.4%
Ever heard about family planning	Yes	2	0.5%
	No	282	99.5%
Ever used family planning	Yes	102	26.6%
	No	282	73.4%
What method were you using just before you realized you were pregnant	Modern	228	80.9%
	Traditional	54	19.1%
Discussed with husband about family planning	Yes	213	55.5%
	No	171	44.5%
How long she had stayed without contraceptive	< 6 months	192	50%
	6–12 months	71	18.4%
	> 12 moths	121	31.6%

Table 2. Health system factors and access to services and family information of the participants.

women have access to better family planning knowledge and services and this calls for better family planning education and effective outreach programmes to urban women.

Pregnant women from monogamous relationships had a 3.6 times increased odds of having unplanned pregnancy compared to women in polygamous families. This is similar to what was found in a study in Ethiopia[23] in which women from polygamous relationships had decreased odds of having unplanned pregnancy. However, a study in Nigeria[24] showed a significant association between monogamy and non-utilization of contraception although this was not supported in another study[25].

Unemployed pregnant women had 4.2 times increased odds to have unplanned pregnancy as compared to their counterparts who were employed. This is similar to a study in Malaysia[26] in which women with good financial status were unlikely to have an unplanned pregnancy. These findings may suggest that women of a low economic status were most unlikely to pay for and use family planning services.

Pregnant women whose partners of were in the informal employment sector had 2.8 times increased odds to have an unplanned pregnancy as compared to those in the formal sector. This was found in a study in Iran and in Uganda[8,27] in which women with husbands who were self-employed were more likely to have unplanned pregnancy. This could be due to reduced up take of family planning as well as reduced awareness about available modern contraceptive methods[28].

Women who had not discussed with their husbands about family planning and the method to use had 2.3 times increased odds of having an unplanned pregnancy compared to those who had discussed. These findings are in agreement with studies in Ethiopia[7,29] in which spouses who discussed about family planning and the methods to use had reduced chances of having unplanned pregnancy. Empowering women to make family planning choices and involvement of spouses increases family use and prevention of unplanned pregnancy.

In this study, respondents who were single were less likely to get unplanned pregnancy, however this is contrary to several study findings. These studies showed that single women had increased odds of having unplanned pregnancy. This could be because single women may not have adequate information and access to sexual and reproductive health services and in particular contraceptive knowledge[30,31]. Additionally, many of these single women are young and may not afford the family planning products and services. Stock run outs and lack of skilled health providers are common in areas where these services are provided free or at a subsidized price.

In our study women whose monthly income was 200,000 shillings or more were less likely to have unplanned pregnancy compared to women whose income was those less. This is consistent with findings from Uganda and Bangladesh[8,22], which found that women with low income had increased odds of unplanned pregnancy. Women with low income are at increased risk of getting an unplanned pregnancy because of their inability to access quality reproductive health services and commodities including use of contraception and hence have a difficulty in controlling their fertility.

Women of Seventh Day Adventist faith were less likely to get an unplanned pregnancy compared to the Anglicans. This is contrary to what was found in Malaysia and Bangladesh in which Muslim women were more likely to have unplanned pregnancy compared to their non-Muslim counterparts[22,26]. This could be due some

	Factors	Unplanned	Planned	Crude OR (95% CI)	Adjusted OR (95% CI)	*P*-value
Age	Below 20	16 (12.3%)	11 (4.3%)	1.0	1.0	-
	20–24	31 (23.8%)	49 (19.3%)	3.2 (1.3–5.8)	2.8 (1.4–5.8)	0.021
	25–34	62 (47.7%)	161 (63.4%)	3.8 (2.1–7.2)	3.9 (2.6–10.2)	0.001
	35 and above	21 (16.2%)	33 (13.0%)	1.2 (0.7–2.6)	1.4 (0.6–2.8)	0.432
Religion	Anglican	26 (20.0%)	51 (20.1%)	1.0	1.0	-
	Born again	27 (20.8%)	41 (16.1%)	0.6 (0.3–1.8)	0.7 (0.4–1.6)	0.224
	Catholic	35 (26.9%)	81 (31.9%)	1.3 (0.7–2.8)	1.6 (0.7-3.0)	0.487
	Moslem	37 (28.5%)	75 (29.5%)	1.4 (0.6–3.1)	1.7 (0.6–3.5)	0.318
	SDA	5 (3.8%)	6 (2.4%)	0.3 (0.9–3.3)	0.2 (0.09–0.6)	0.001
Marital status	Married	113 (86.9%)	248 (97.6%)	1.0	1.0	-
	Single	17 (13.1%)	6 (2.4%)	0.5 (0.9–3.1)	0.4 (0.2–0.8)	0.043
Residence	Rural	45 (34.6%)	56 (22.0%)	1.0	1.0	-
	Urban	85 (65.4%)	198 (78.0%)	4.4 (2.1–6.9)	3.9 (2.2–7.5)	0.001
Polygamous family	Yes	35 (26.9%)	66 (26.0%)	1.0	1.0	-
	No	95 (73.1%)	188 (74.0%)	3.3 (1.9–7.2)	3.6 (2.1–6.9)	0.003
Level of education	Primary	42 (32.3%)	65 (25.6%)	1.0	1.0	-
	Secondary and above	88 (67.7%)	189 (74.4%)	2.2 (1.3–4.7)	1.7 (0.9–3.2)	0.054
Monthly income	< 200,000	94 (72.3%)	143 (56.3%)	1.0	1.0	-
	>=200,000	36 (27.7%)	111 (43.7%)	0.4 (0.1–0.8)	0.3 (0.1–0.6)	**0.04**
Employment status	Employed	42 (32.3%)	135 (53.1%)	1.0	1.0	-
	Unemployed	88 (67.7%)	119 (46.9%)	4.7 (2.3–9.5)	4.2 (2.4–8.9)	**0.003**
Partner's occupation	Formal sector	33 (25.4%)	77 (30.3%)	1.0	1.0	-
	Informal sector	97 (74.6%)	177 (69.7%)	3.3 (2.4–6.3)	2.8 (1.7–4.5)	**0.018**
Ever used family planning	No	43 (33.1%)	59 (23.2%)	1.0	1.0	-
	Yes	87 (66.9%)	195 (76.8%)	1.9 (0.8–2.6)	1.7 (0.6–3.6)	0.286
Discussed with your husband about FP	Yes	75 (47.5%)	138 (61.1%)	1.0	1.0	-
	No	83 (52.5%)	88 (38.9%)	1.8 (1.2–4.2)	2.3 (1.4–5.4)	**0.021**
How long she had stayed without contraceptive	Less than 6 months	66 (40.2%)	126 (57.3%)	1.0	1.0	-
	6 months – 1 year	22 (13.4%)	49 (22.3%)	0.6 (0.3–2.4)	0.5 (0.2–1.6)	0.227
Source of information on Family planning	Friends	16 (12.3%)	26 (10.2%)	1.0		
	Health facility	93 (71.5%)	197 (77.6%)	1.7 (0.7–3.6)	"-"	"-"
	Mass media	21 (16.2%)	31 (12.2%)	1.2 (0.5–3.3)		
Distance from residence to family planning clinic	Less than 2 km	68 (52.3%)	162 (63.8%)	1.0		
	2–5 km	32 (24.6%)	54 (21.3%)	0.5 (0.3–2.1)	"-"	"-"
	Over 5 km	30 (23.1%)	38 (15.0%)	0.4 (0.2–1.8)		

Table 3. Predictors of unplanned pregnancy among the participants. "-": not applicable.

religious beliefs which put husbands to be in charge of families with all other decisions including family planning. In many low- and middle-income settings, women's freedom to make choices are limited. In these patrilineal societies, the male partners make decisions for the family including the use of family planning[22].

Study limitations

This was a cross-sectional study, and does not show temporal relationships and since this study was institution based, it may lack generalizability to the rest of the country.

Conclusions

The prevalence of unplanned pregnancy at this hospital was high.

The predictors of unplanned pregnancy among pregnant women attending antenatal care at Kawempe were; maternal age, being in urban residence, family type, women who were employed, partner being in informal sector, spousal communication, marital status, economic status and religion. Empowering families by improving their economic status and spousal communication can reduce unplanned pregnancy in our community.

Data availability

The data can be obtained from the corresponding author at reasonable request.

Received: 25 October 2024; Accepted: 23 April 2025
Published online: 08 December 2025

References

1. Maier, K. M., Kirkham, C. M., Lim, E., Cheung, K. W. & Grzybowski, S. Pregnancy planning guide. Evidence-based information for prospective parents. *Can. Fam Physician*. **48**, 1199–1205 (2002).
2. Yaya, S. & Ghose, B. Prevalence of unmet need for contraception and its association with unwanted pregnancy among married women in Angola. *PLOS ONE*. **13** (12), e0209801 (2019).
3. Getu Melese, K., Gebrie, M. H., Berta Badi, M. & Mersha, F. W.: 'Unintended Pregnancy in Ethiopia: Community Based Cross-Sectional Study', Obstet Gynecol Int, 2016, p. 4374791 (2016).
4. Habib, M. A. et al. Prevalence and determinants of unintended pregnancies amongst women attending antenatal clinics in Pakistan. *BMC Pregnancy Childbirth*. **17** (1), 156 (2017).
5. Black, A. Y. et al. The cost of unintended pregnancies in Canada: estimating direct cost, role of imperfect adherence, and the potential impact of increased use of Long-Acting reversible contraceptives. *J. Obstet. Gynaecol. Can.* **37** (12), 1086–1097 (2015).
6. Ayalew, H. G. et al. Prevalence and factors associated with unintended pregnancy among adolescent girls and young women in sub-Saharan Africa, a multilevel analysis. *BMC Womens Health*. **22** (1), 464 (2022).
7. Nigussie, K., Degu, G., Chanie, H. & Edemealem, H. Magnitude of unintended pregnancy and associated factors among pregnant women in Debre Markos town, East Gojjam zone, Northwest Ethiopia: A Cross-Sectional study. *Int. J. Womens Health*. **13**, 129–139 (2021).
8. Asrat, D., Copas, A. & Olubukola, A. Exploring the association between unintended pregnancies and unmet contraceptive needs among Ugandan women of reproductive age: an analysis of the 2016 Uganda demographic and health survey. *BMC Pregnancy Childbirth*. **24** (1), 117 (2024).
9. Bellizzi, S., Mannava, P., Nagai, M. & Sobel, H. L. 'Reasons for discontinuation of contraception among women with a current unintended pregnancy in 36 low and middle-income countries', Contraception, **101**, (1), pp. 26–33 (2020).
10. Mechal, N., Negash, M., Bizuneh, H. & Abubeker, F. A. Unmet need for contraception and associated factors among women with cardiovascular disease having follow-up at saint Paul's hospital millennium medical college, addis Ababa, Ethiopia: a cross-sectional study. *Contracept. Reproductive Med.* **7** (1), 6 (2022).
11. Bearak, J., Popinchalk, A., Alkema, L. & Sedgh, G. Global, regional, and subregional trends in unintended pregnancy and its outcomes from 1990 to 2014: estimates from a bayesian hierarchical model. *Lancet Glob Health*. **6** (4), e380–e389 (2018).
12. Böttcher, B., Abu-El-Noor, M. A. & Abu-El-Noor, N. I. *Causes and Consequences of Unintended Pregnancies in the Gaza Strip: a Qualitative Study* (BMJ Sex Reprod Health, 2019).
13. Hall, J. A., Barrett, G., Copas, A. & Stephenson, J. London measure of unplanned pregnancy: guidance for its use as an outcome measure. *Patient Relat. Outcome Meas.* **8**, 43–56 (2017).
14. Solanke, B. L., Kupoluyi, J. A., Akinyemi, J. O. & Banjo, O. O. Do community characteristics influence unintended pregnancies in Kenya? *Malawi Med. J.* **31** (1), 56–64 (2019).
15. Niguse Hamba, M. *Prevalence and Associated Factors of UnintendedPregnancy among Pregnant Women Attending Antenatal Care Unit at Jimma University MedicalCenter* (A Cross Sectional Study', 2020).
16. Crede, S. et al. Factors impacting knowledge and use of long acting and permanent contraceptive methods by postpartum HIV positive and negative women in cape town, South Africa: a cross-sectional study. *BMC Public. Health*. **12**, 197 (2012).
17. Alum, A. C., Kizza, I. B., Osingada, C. P., Katende, G. & Kaye, D. K. Factors associated with early resumption of sexual intercourse among postnatal women in Uganda. *Reprod. Health*. **12**, 107 (2015).
18. Jackson, E. Controversies in postpartum contraception: when is it safe to start oral contraceptives after childbirth? *Thromb. Res.* **127**, S35–S39 (2011).
19. Hall, J. A. et al. 'Prevalence and determinants of unintended pregnancy in Mchinji district, Malawi; using a conceptual hierarchy to inform analysis'. *PLoS One*, **11**, (10), pp. (2016). e0165621.
20. Agida, T. E., Akaba, G. O., Ekele, B. A. & Adebayo, F. Unintended pregnancy among antenatal women in a tertiary hospital in North central Nigeria. *Niger Med. J.* **57** (6), 334–338 (2016).
21. Prusty, R. K. Use of contraceptives and unmet need for family planning among tribal women in India and selected hilly States. *J. Health Popul. Nutr.* **32** (2), 342–355 (2014).
22. Roy, T. K. & Singh, B. P. Correlates of unwanted births in Bangladesh: A study through path analysis. *PLoS One*. **11** (10), e0164007 (2016).
23. Asrese, E. T. & Adem, Y. F. Contraceptive utilization and associated factors among polygamous and monogamous women in Worebabo woreda, South Wollo zone, Ethiopia: a comparative cross sectional study. *BMC Women's Health*. **23** (1), 39 (2023).
24. Audu, B. et al. Polygamy and the use of contraceptives. *Int. J. Gynaecol. Obstet.* **101** (1), 88–92 (2008).
25. Zeleke, L. B. et al. Individual and community level factors associated with unintended pregnancy among pregnant women in Ethiopia. *Sci. Rep.* **11** (1), 12699 (2021).
26. Muslimah Yusof, A. A. S. Maisarah Omar & Noor Ani Ahmad: 'unplanned pregnancy and its associated factors'. *Global J. Health Sci.* **10** (8), 132 (2018).
27. Najafian, M., Karami, K. B., Cheraghi, M. & Mohammad Jafari, R. 'Prevalence of and Some Factors Relating with Unwanted Pregnancy, in Ahwaz City, Iran, 2010', ISRN Obstetrics and Gynecology, 2011, p. 523430 (2011).
28. Sosina Mulat, M. F. & Abera, H. Gezahegn Bekele and Asres Bedaso: 'prevalence of unplanned pregnancy and associated factors among mothersattending antenatal care at Hawassa City public hospitals, Hawassa, SNNPR,Ethiopia'. *J. Women's Health Care*, 6, (4) (2017).
29. Tsegaye, A. T., Mengistu, M. & Shimeka, A. Prevalence of unintended pregnancy and associated factors among married women in West Belessa woreda, Northwest Ethiopia, 2016. *Reprod. Health*. **15** (1), 201 (2018).
30. Izugbara, C. O., Ochako, R. & Izugbara, C. Gender scripts and unwanted pregnancy among urban Kenyan women. *Cult. Health Sex.* **13** (9), 1031–1045 (2011).
31. Yenealem, F. & Niberet, G. Prevalence and associated factors of unintended pregnancy among pregnant woman in Gondar town, North West Ethiopia, 2014. *BMC Res. Notes*. **12** (1), 161 (2019).

Acknowledgements

Special thanks to the study participants, Kawempe hospital administration and department of Obstetrics and Gynaecology Makerere University College of Health Sciences.

Author contributions

Investigation: Fredrick Makumbi, Paul Kiondo and Peter Sebaduka, Julius Wandabwa, Milton Musaba. Methodology: Paul Kiondo, Peter Sebaduka, Milton Musaba. Project administration: Fredrick Makumbi. Supervision: Paul Kiondo and Peter Sebaduka. Validation: Paul Kiondo and Peter Sebaduka, Milton Musaba, Julius Wandabwa. Writing-original draft: Fredrick Makumbi, Paul Kiondo and Peter Sebaduka, Miton Musaba, Julius Wandabwa. Writing- review and editing: Fredrick Makumbi, Paul Kiondo and Peter Sebaduka, Milton Musaba, Julius Wandabwa

Funding
There was no funding for this study. This work was for a dissertation by a Master of Medicine student in Obstetrics and Gynaecology.

Disclosure: This work has been uploaded to Makerere University Repository http://hdl.handle.net/10570/12158.

Declarations

Ethics approval
Approval to conduct the study was obtained from Makerere School of medicine and research ethics committee (Mak-SOM-REC-2022-482). Permission to conduct the study at Kawempe National Referral Hospital was granted by the hospital Director. Written informed consents were obtained from all the study participants.

Consent for publication
Permission to publish this work was obtained from Makerere University College of Health Sciences, department of Obstetrics and Gynaecology.

Competing interests
The authors declare no competing interests.

Additional information
Correspondence and requests for materials should be addressed to P.K.

Reprints and permissions information is available at www.nature.com/reprints.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Open Access This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

© The Author(s) 2025