Title: Ambivalence in pregnancy intentions: the effect of quality of care and context among a cohort of women attending family planning clinics in Kenya.

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Abstract

Context: A complete understanding of pregnancy intentions is essential for research and programs efforts of preventing unwanted childbearing. There is a need to better understand ambivalence in pregnancy intentions and its associated factors in sub-Saharan African (SSA) settings.

Objective: The primary goal is to examine ambivalence in pregnancy intentions and its association with quality of care of reproductive health (RH) services controlling for demographic, socio-economic and contextual factors among a cohort of family planning clients in Kenya.

Methods: A quasi-experimental study was implemented by the Integra Initiative in government clinics in Kenya and Swaziland to provide evidence on the benefits and costs of HIV/SRH service integration in SSA settings. Two models of integration were tested: (1) integration of HIV services into family planning (FP model) and (2) Integration of HIV services into postnatal care (PNC model). This paper uses data drawn from a prospective cohort study of family planning clients to investigate the effect of the quality of care in the FP model. We used logistic regression with random effects to assess the predictive effect of quality of care of reproductive health (RH) services on pregnancy ambivalence controlling for background characteristics. The analyses included a total of 1957 women aged 15–49 attending twelve family planning clinics in Central Province, Kenya. A total of 1053 women were observed in all four rounds.

Findings: About 43% of women expressed ambivalence about their intentions to become pregnant at one point, while the rest (57%) remained unequivocal during observation. The quality of care of RH services of a facility was negatively associated with ambivalence of its clients. An increase in the quality of care scores is associated with lower odds of pregnancy ambivalence net of other factors (OR 0.95; p-value=0.003). Other factors independently associated with pregnancy ambivalence among women were age, marital status, number of surviving children, having achieved desired family size and HIV status of the woman.

Conclusion: Ambivalence towards pregnancy is present among women in sub-Saharan settings, which underscores the need to expand our understanding of pregnancy intentions. There is need for capturing pregnancy ambivalence in the surveys such as demographic health surveys (DHS) and programs in order to prevent unintended pregnancies.

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INTRODUCTION

Unintended pregnancy continues to attract concern and attention from researchers, policy makers and program implementers. Mainstream research and policy work tends to treat fertility and pregnancy intentions as clear-cut dichotomous categories (i.e. intended or unintended) [1, 2]. Pregnancy wanted status is derived from retrospective reporting on the last pregnancy or childbirth in most surveys. The demographic and health surveys (DHS) measure pregnancy wanted status using the following question: At the time you became pregnant, did you want to become pregnant then, did you want to wait until later, or did you not want to have any (more) children at all?[3]. An unintended pregnancy is then classified as one that is reported to have been mistimed (occurred earlier than planned) or unwanted (occurred when no more children were desired [3]. This classification is simplistic and does not reveal the complexity of reproductive intentions [1, 4]. Secondly, retrospective assessment of pregnancy intention suffers from ex post rationalization bias [5]. As such multidimensional[6] and prospective[4, 7] measures of pregnancy intentions have been proposed to better capture this complex phenomenon.

Pregnancy intentions are complex and involve emotional and psychological factors[1]. Pregnancy intentions are a product of not just individual intentions, but rather a product of multiple interwoven social and economic influence, including community, partner and personal values about childbearing [1]. A body of qualitative work has shown that some women hold pregnancy/fertility attitudes and intentions that are ambivalent, contradictory or poorly specified [8]. Some studies have also found discrepancies between pregnancy intentions and a woman's happiness or unhappiness [9]. Therefore, rates of unintended pregnancy and unmet need for contraception worldwide that are based on current measures of fertility intentions and nonuse of contraception might not be accurate, as some of these women do not have firm motivations towards avoiding pregnancy [10].

The concept of fertility/ pregnancy ambivalence has developed from dissatisfaction with extant measures of pregnancy intentions that depict reproductive desires as clear-cut categories rather than a nuanced continuum [11]. It has been suggested that intended and unintended should be considered as two ends of a continuum [12]. The continuum involves at least intentionality (planning) and effective (happiness or otherwise) dimensions[12]. Pregnancy ambivalence, therefore, refers to fertility/pregnancy desires that may be conflicted, contradictory or not clearly established [2, 11]. It also refers to the coexistence of both positive

and negative feelings about getting pregnant. Studies have shown that women feel varying degrees of conviction about either trying to become pregnant or avoiding pregnancy [13].

Some quantitative studies have similarly established the existence of pregnancy ambivalence in different settings. For example a study in the United States (US) found that 29% of the women expressed ambivalence about pregnancy [2]. Another study in the US found that 45% of women and men respondents exhibited pregnancy ambivalence[11]. In Africa, an analysis of DHS data from Burkina Faso, Ghana and Kenya showed that at least a quarter of women (a third in Kenya) who wanted to delay or limit childbearing reported that a pregnancy in the next few weeks will not be a problem[14].

To date there exist two main types of studies on pregnancy ambivalence. The first group of studies has attempted to investigate the effect of pregnancy ambivalence on contraceptive use behaviour of women. These studies show that women who express ambivalent feelings towards pregnancy may use less effective methods of contraception [2] and/or are inconsistent users of contraceptive methods [15, 16]. It is, therefore, important to have a more complete understanding of pregnancy intentions in order to increase contraceptive use to prevent unintended pregnancies and to improve the health of women and their children [1].

Another group of studies document the prevalence and correlates of pregnancy ambivalence in women. These studies show that important predictors of pregnancy ambivalence include age, marital status and religious faith of the woman [2]. Studies that have examined ambivalence and its determinants generally come from the US, with a few exceptions [4, 17]. There is a dearth of information on the extent of pregnancy ambivalence and its determinants in the developing world. In Sub-Saharan Africa settings in particular quality of care of family planning services and HIV/AIDs are issues of concern that might affect fertility/pregnancy intentions of concerned women.

Health care delivery in African settings is often bedeviled by quality of care concerns. Evidence shows that improving the quality of reproductive health services that women receive improves client's satisfaction and continued use of the services [18]. However, there is no empirical evidence on the effect of quality of care on fertility/pregnancy intentions. It is, therefore, hypothesized here that improved quality of experiential clinical care) helps women form

unequivocal pregnancy/fertility intentions and subsequently enhances their ability to achieve their fertility goals or reproductive intentions.

Sub-Saharan Africa (SSA) is the world region with the highest numbers of people living with HIV, and the highest levels of adult (15-49%) HIV prevalence[19]. Most PLWHA in SSA are in their prime child-bearing and rearing years, many are already parents, and live in a context where a high premium continues to be placed on fertility and parenthood [20-22]. Studies done in Sub-Saharan Africa in the 1990s and early 2000s reported declines in fertility rates of women living with HIV/AIDS [23, 24]. They also reported lower fertility desires among HIV-infected individuals than their uninfected peers [25]. However, recent research conducted in the context of expanding availability of antiretroviral therapy (ART) has produced mixed results [26]. However, the effect of HIV status on pregnancy ambivalence is virtually unknown.

The overall objective of this study is to examine the prevalence of pregnancy ambivalence and its relationship with quality of care of services, controlling for socio-economic factors among a cohort of family planning clients in central Kenya.

THEORETICAL BACKGROUND AND CONCEPTUALIZATION OF AMBIVALENCE

In order to understand the complexity of pregnancy intentions and motivational systems that underlie them, it is useful to understand how human reproduction is regulated. Childbearing has 3 levels of organization: Biological, psychological and social [27]. At the biological level, human sexual reproduction requires that man and women have sexual intercourse and that the resultant children are cared for. This phenomena has been referred to as “Sex and Nurturant schemas” [27]. Each of them plays an important role in the process of childbearing and rearing. For example, the sexual partners have to decide if they would want to carry each other’s genetic material. They may also evaluate each other’s credentials for parenting and childrearing.

At the psychological level, motivation is crucial to how people feel and behave to achieve their childbearing goals. Stable motivational disposition have been referred to as traits, while variable constructs such as desires and intentions are referred to as states [27]. Miller developed what is referred to as a Traits-Desires-Intentions-Behaviour (TDIB) framework, which describes a sequence by which motivational traits are translated via conscious desires and

intentions into behaviour [28]. Desires are conscious wishes and wants for things such as children, while intentions are conscious commitment to act or achieve reproductive goals as constrained by others (partner) or reality (what is possible) [29].

Most measures of pregnancy intentions are consistent with the theory of planned behaviour (TPB), which assumes that women hold desires, intentions, or plans regarding fertility and pregnancy that can be articulated and that they act according to those beliefs [3]. Childbearing motivational traits involve both the positive and negative feelings that are elicited by children and their care [29]. Individual's positive and negative feelings about childbearing are shaped by a range of beliefs, including perceptions of enjoyment to be gained from children, and how childbearing will affect their lives, career and relationships [30]. The desires commonly conceptualized in terms of "wanted" and "unwanted" pregnancy rest upon these motivational traits [29].

At the social level the fertility motivation of two (woman and man) partners brings them together to act as a dyad. This, therefore, combines each individual's motivation, desires and perceived desires of his or her partner. It has been found that humans perceive the motivations, desires and intentions of their intimate partners [27]. Couples who desire a child can make efforts to achieve conception (proceptive behaviour), while those who wish to avoid having a child can embark on efforts to prevent conception (contraceptive behaviour) [29]. Pregnancy intentions are, therefore, a product of these biological, psychological and social forces, whose complexity cannot be fully captured by extant dichotomous constructs.

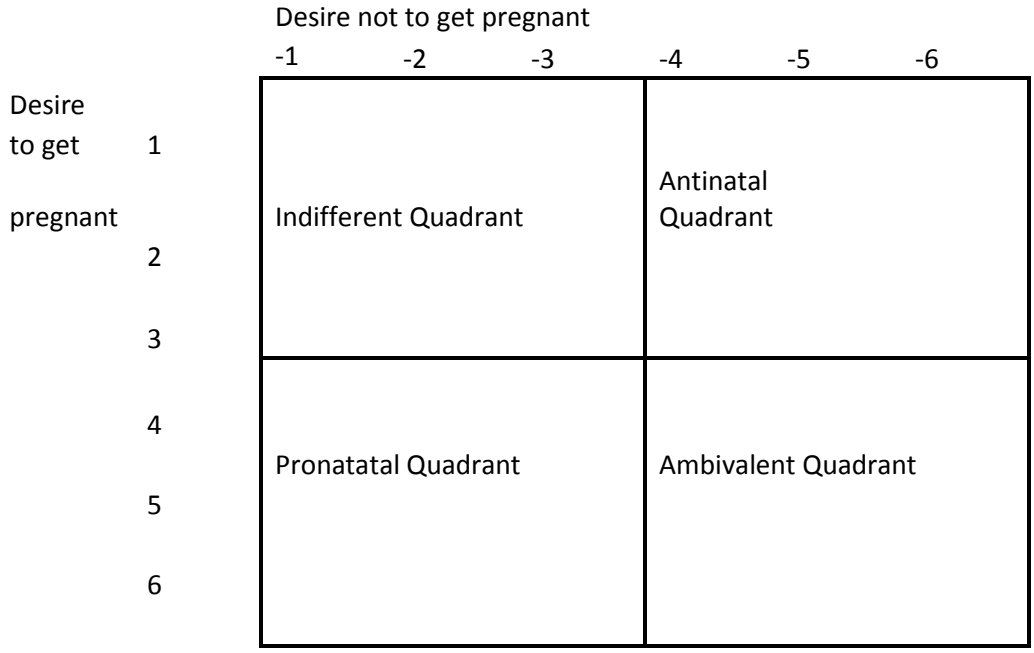
Measuring pregnancy ambivalence

There are two main ways that researchers have used to measure pregnancy ambivalence. The first approach is to measure the difference between pregnancy/fertility intention and pregnancy affect [1, 11]. According to this approach, women are considered to be ambivalent if they report no childbearing desires or avoiding pregnancy, but they would be happy if they found out they were pregnant [11]. Trussell and colleagues found contradictions between childbearing desires and happiness and contraceptive use [9].

The second approach is a psychometric measure of women attitudes on how much they want (ed) to get pregnant and how much they want(ed) to avoid getting pregnant. The response category for both questions are on a likert scale, usually ranging from 1 (low desire) to 6 (a very large amount of desire)[13] or 0 (not at all) to 5(really) [7]. On an ordinal scale, women are first asked on how much they wanted to avoid pregnancy for a particular period. They are again

asked on how much they wanted to get pregnant. A cross tabulation between "desire not to get pregnant" (horizontal) and "desire to get pregnant" (vertical) generates four quadrants of pregnancy intentions: Indifferent (low positive and low negative), antinatal (low positive and high negative) pronatal (high positive and low negative) and ambivalent (high positive and high negative) values, (see figure 1). Another variant of this psychometric measure is the London measure of unplanned pregnancy developed in the UK [17]. This tool comprises 6 questions covering 6 thematic areas of current or recent pregnancy: fertility intentions, desire for motherhood, contraceptive use, preconception preparations, timing, and partner influence [17]. Each item is scored 0-2 meaning that the total score ranges from 0-12. The scores are categorized as follows: 0-3 (Unplanned); 4-9 (Ambivalent); 10-12 (Planned) [31].

Figure 1: Interaction of two pregnancy desire dimensions



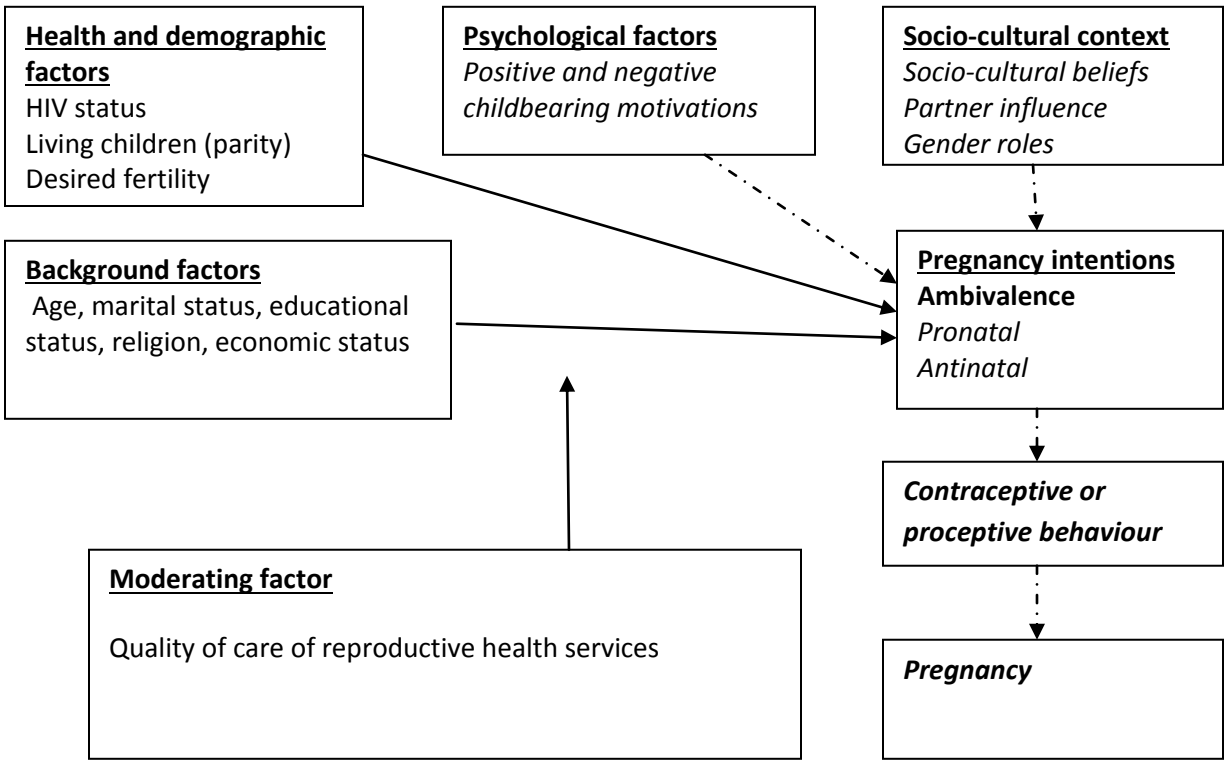
Adapted from Miller 2007

Conceptual framework

The conceptual framework (Fig. 2) identifies three fertility/pregnancy intention outcome variables: Pronatal, antinatal and ambivalence. In this paper, the focus is on pregnancy ambivalence as the dependent outcome variable. Figure 2 shows the possible associations between a range of background, socio-demographic, psychological factors at the individual, community and health facility levels and the outcome factors. The solid lines represent associations that are examined in this paper; the dotted lines represent possible associations,

but those that are not tested in this paper. The variables in italics are not measured in this study.

Figure 2: Conceptual framework of relationship between explanatory variables and pregnancy ambivalence



The conceptual framework includes some individual background factors such as age, marital status, educational status, religion and economic status that are hypothesized to influence pregnancy ambivalence behaviour. Evidence from the literature in the US suggests these factors are independently associated with pregnancy ambivalence [30]. Similarly, parity has been shown to have an independent effect on fertility/pregnancy intentions irrespective of HIV status in SSA settings [26]. Emerging evidence also shows that HIV-positive status negatively affects fertility intentions [25, 26]. Conceptually, the quality of care of reproductive health services can be viewed as a moderating variable, which intensifies or attenuates the effects of background characteristics and socio-demographic factors on pregnancy ambivalence. Although they are not considered in this analysis, extant literature shows that positive and negative childbearing motivations [7, 13], and socio-cultural context such as gender and partner influence[27, 29] may affect pregnancy intentions including ambivalence.

METHODOLOGY

Data sources

A quasi-experimental study was carried out by the Integra Initiative in government clinics in Kenya and Swaziland – assigned into control/intervention groups –to providence evidence on the benefits and costs of HIV/SRH service integration in SSA settings. Two models of service integration were tested: 1). Integration of HIV services into family planning (FP Model) (2). Integration of HIV services into postnatal care (PNC model). Following a cohort of women (15-49 years) attending family planning/postnatal clinics, the study sought to investigate the effect of service integration on individual outcomes including SRH service use, HIV status knowledge and pregnancy outcomes (intended/unintended). The full study methodology is described elsewhere [32]. This article uses data from a two-year cohort study of family planning clients attending 12 clinics in central Kenya to examine the effect of quality of care of RH services on pregnancy ambivalence.

Context

The FP model of integration was implemented in Central Province in Kenya, where health facilities serve a population with a high contraceptive prevalence rate (67%) compared with the national average (46%) [33]. In contrast the HIV prevalence rate among women aged 15 to 49 years(6.2) in Central Province is lower than the national level(8.0) [33]. Likewise the total fertility rate (3.4) in Central Province is substantially lower than the national rate (4.6). In the same vein the mean number of children ever born (4.4) in Central Province is lower than the national average (5.6). The percent of women who want no more children (63.6%) is lower than the national rate (53.6) [33].

Our measure of pregnancy ambivalence

Our measure of ambivalent adopts the first approach that assesses contradictions between pregnancy intentions and affect as derived from survey questions assessing fertility/pregnancy intentions and pregnancy affect. Fertility/pregnant intention was captured by the following questions :1) (Since last we talked to you) would you like to have a/child, or would you prefer not have any (more) children? Response categories were Yes, No and undecided. (2) When do you think you may have your (first or next) child? Pregnancy affect was captured by the following question: “If you found out that you were pregnant tomorrow would you be: happy, sad, or you would mind? Respondents were coded as ambivalent if they exhibited strong positive and negative feelings about intentions and effect.

Pregnancy ambivalence is, therefore, defined as: (1) the condition of not desiring children, but will be happy if she found out that she is pregnant tomorrow; (2) the condition of wanting a child within one year, but would be sad if she found out that she is pregnant tomorrow; 3) the condition of wanting to wait for at least 2 years before having a (more) child, but would be

happy if she found that she is pregnant tomorrow; and (4) the condition of being undecided as to whether they any more (but will be sad or happy if found out that they are pregnant).

Variables

The outcome variable for this analysis is pregnancy ambivalence, created as a dichotomous binary variable. The main explanatory variable is the quality of care score of family planning services of health facility (continuous variable). Quality scores were derived by developing a composite quality score from 35 attributes of clinical process based on a grading model and measured against the national standards. Data for this assessment was drawn from the observations of client–provider interactions during FP service use. Technical competence and interpersonal relations were assessed on history taking, physical examination, fertility advice, use of information, education and communication (IEC) materials during counselling and documentation. Other explanatory variables include: demographic variables (Age, marital status, number of living children) and socio-economic and contextual factors (religion, education, household wealth index and HIV status) of women (categorical variables. The choice of these variables is guided by the literature on factors associated with ambivalence in the US [2] and other hypothesized factors in our setting.

Statistical Analysis

Data collected were cleaned, edited, coded and analyzed using Stata version 12. The analysis involved deriving descriptive frequency tables and then multivariate analyses. The first step was to perform cross tabulations with chi-square tests of significance. The second part involves fitting a multivariate logistic model. We included all covariates of theoretical significance in the multivariate regression model. To identify the predictors of pregnancy ambivalence, a multivariable logistic regression with random effects model is fitted to control for unobserved characteristics of the individuals from the same health facility. The unity of analysis is the number of observations (3674) as each woman had four records of observation. We reshaped the data from wide to long given its longitudinal nature before fitting the regression model.

Ethical considerations

Ethical approval for the FP model was sought from and granted by Population Council Institutional Review Board and Kenya Medical Research Institute (KEMRI) Ethical Review Board. Written informed consent was obtained from each respondent and confidentiality was assured before conducting data collection. The process of seeking informed consent involved providing detailed information about the study including: aims/methods of study; anticipated benefits, risks/ discomfort it may cause; the duration of the interview; voluntary participation and the fact they have a right to refuse to answer any questions and may withdraw from the study at any time if they wish, without any reprisals.

RESULTS

Table 1 presents the distribution of respondents by various background characteristics. The mean of women was 29 years at baseline and 31.7 at endline. The majority of women were married, had primary level of education, were unemployed or self-employed in business, and were pentecostals. Those who stated they were HIV positive were 12.8% at the baseline and 10.1% at endline. The mean number of respondent's children was 2.3 at baseline and 2.5 at endline. There were significant variations in the distribution of respondents in the control and intervention of the background characteristics considered except marital status.

Table1: Background Characteristics of study participants (N=1957)

	Baseline			**End line**		
	Control (n=1004)	Intervention (n=953)	Total (n=1957)	Control (n=611)	Intervention (n=544)	Total (1155)
Mean age in years (15-45)	29.7	28.3	29.0	32.3	31.0	31.7
Marital status						
Never Married	5	6	5	4	6	5
Married	92	92	92	90	89	90
Formerly Married	3	3	3	5	5	5
Education						
Primary and below*	65	55	60	64	54	59
Secondary	31	36	34	33	37	35
Tertiary	4	9	6	3	9	6
Religion						
Protestant	31	36	34	31	36	33
Catholic	25	28	26	24	29	26
Pentecostal	38	31	34	40	30	35
Other	6	5	6	5	5	5
Occupation						
Unemployed	36	37	36	35	28	32
Business	42	48	45	26	31	28
Employed	23	15	19	40	41	40
HIV status						
HIV positive	14.3	11.1	12.8	12.3	7.7	10.1
HIV Negative	82.5	84.8	83.6	84.8	92.3	88.3
Don't know	2.0	2.6	2.3	2.3	0.0	1.2
Didn't disclose	1.2	1.5	1.3	0.7	0.0	0.4
No. of living children(1-10)	2.6	2.1	2.3	2.8	2.2	2.5

* Less than 1% had no formal education

Pregnancy ambivalence among a cohort of women in the study

Respondents were classified either as ambivalent or unequivocal in the intentions to become pregnant at each round. Table 2 shows the changes in women pregnancy intentions across three rounds of observation in the two years of follow up. Overall, over 43% of the respondents expressed some ambivalence about getting pregnancy, while the rest (57%) consistently remained unequivocal throughout rounds in the two years of follow up (table 2). The majority of those who expressed some ambivalence oscillated between being ambivalence and unequivocal, as only 0.4% consistently reported ambivalence throughout the rounds.

Table 2: The proportions of ambivalent shift during follow up

Ambivalent shift	**Round 0 to Round 3**	
	Number	Percentage
Ambivalent to unequivocal	126	11.97
Unequivocal to Ambivalent	321	30.48
Remained Ambivalent	4	0.38
Remained unequivocal	602	57.17
Total	**1053**	**100**

Table 3 presents the results (log odds) from multivariate analyses of pregnancy ambivalence. Pregnancy ambivalence has a significant relationship with the following: Quality of care, Age, Marital status, number of living children, achieving fertility desire and HIV status of the woman. There is a significant negative multivariate relationship between the quality of care score and pregnancy ambivalence net of other factors. An increase in the quality of care score of a health facility was associated with reduced odds of pregnancy ambivalence controlling for other factors in the model (OR=0.95; P=0.003). Pregnancy ambivalence is also negatively associated with number of living children (parity) of the woman. For, example women with four and more children had 61% lower odds of pregnancy ambivalence than women with 1 and less children (P=<0.001). Similarly, achieving desired family size was negatively associated with pregnancy ambivalence. A woman's HIV-positive status was associated with an almost 50% lower likelihood of being ambivalent (OR=0.49; P=<0.001). Finally, formerly married women had reduced odds of pregnancy than the currently married women (OR=0.56; P=<0.007).

Table 3: Odds ratios from multivariate random effects logit model predicting ambivalence

Characteristic	Odds ratio	Std error	z	Pvalue
Quality of care	0.95 (0.92-0.98)	0.017	-2.95	0.003
Age				
15-24 (ref)	1.00			
25-29	1.43 (1.09-1.86)	0.194	2.61	0.009
30-34	1.65 (1.21-2.26)	0.263	3.17	0.002
35-39	1.82 (1.25-2.66)	0.350	3.14	0.002
40 plus	1.80 (1.10-2.93)	0.448	2.34	0.019
Marital status				
Married (ref)	1.00			
Never Married	1.06 (0.65-1.72)	0.260	0.24	0.812
Formerly Married	0.56 (0.29-1.08)	0.187	-1.73	0.007
Education Status				
Primary & less (ref)	1.00			
Secondary	0.95 (0.77-1.17)	0.101	-0.47	0.639
Tertiary	0.96 (0.63-1.46)	0.205	-0.19	0.852
Household wealth				
Poorest (ref)	1.00			
Lower Middle	0.94 (0.68-1.29)	0.153	-0.40	0.688
Middle	1.28 (0.94-1.75)	0.202	1.59	0.111
Upper Middle	1.07 (0.78-1.46)	0.170	0.44	0.661
Richest	0.99 (0.71-1.39)	0.170	-0.06	0.956
Religion				
Catholic (ref)	1.00			
Protestant	1.03 (0.81-1.32)	0.129	0.26	0.798
Pentecostal	0.93 (0.73-1.20)	0.118	-0.50	0.615
Other	0.68 (0.39-1.17)	0.189	-1.38	0.167
Living children				
0-1 Child (ref)	1.00			
2 Children	0.78 (0.61-1.00)	0.098	-1.95	0.052
3 Children	0.48 (0.34-0.69)	0.089	-3.97	<0.001
4 and more	0.39 (0.24-0.63)	0.097	-3.79	<0.001
Desired fertility				
Not achieved	1.00			
Achieved	0.30(0.23-0.40)	0.043	-8.40	<0.001
HIV status				
Negative/Unknown (ref)				
HIV Positive	0.49 (0.33-0.74)	0.099	-3.49	<0.001

Conversely, pregnancy ambivalence was positively associated with a woman' age and household wealth. A woman aged 25 and above is more likely to be ambivalent compared to an adolescent woman. For example, women aged 30-34 had almost double the odds of pregnancy ambivalence compared with those aged 15-24 (OR= 1.82; P=<0.001). However, women's education level, household wealth and religious affiliation were not significantly associated with pregnancy ambivalence.

DISCUSSION AND CONCLUSION

Pregnancy ambivalent is an issue of central importance in understanding pregnancy intentions and contraceptive use [11]. The analysis of pregnancy and fertility intentions has tended to narrowly focus on the dichotomous categories of "intended and unintended" pregnancies. However, our analysis supports the growing evidence that this dichotomy is false. Instead there exists a myriad of pregnancy intentions and emotions lying on a continuum, with intended and unintended being the two ends [11, 12]. We found that 43% of the women in this study exhibited some ambivalent feelings about becoming pregnancy at one during the two year period of observation. Different studies have documented different prevalence levels of ambivalence, including 25% [2] and 45% [11] in the United States. In Africa, an analysis of DHS data from Burkina Faso, Ghana and Kenya showed that at least a quarter of women (a third in Kenya) who wanted to delay or limit childbearing reported that a pregnancy in the next few weeks will not be a problem[14]. These findings highlight the need of moving away from dichotomous measures of pregnancy intentions in research and policy arenas.

This study found a negative relationship between pregnancy ambivalence and quality of care of RH services. An increase in the quality of care scores is associated with lower odds of pregnancy ambivalence net of other factors (OR 0.95, P-value=0.003). This relationship is in the expected direction. It is plausible to say that high quality counseling on healthy timing and spacing of pregnancy and provision of information on contraception that comes with an improved quality of care helps women to form unequivocal pregnancy intentions and reduces ambivalence. This study thus provides new evidence to further augment the array benefits of improved care RH services.

In addition to providing evidence on the quality of care on pregnancy ambivalence, the study also examined other independent determinants of pregnancy ambivalence. Other predictors of pregnancy ambivalence included age, marital status, parity, having achieved desired fertility and HIV status. These findings are in alignment with previous studies in the United States. The influence of age, marital status and religious faith on ambivalence are consistent with findings

from the United States [2]. It is quite plausible that the commitment of young, single women to avoid premarital pregnancy is more intense than married women's stated fertility intention. In the same vein women with many children might have realized their ideal family size and so have stronger commitment to stop childbearing than those who are yet to achieve their preferred family size. Because of the fear of perinatal transmission of HIV and deterioration of their health status [34], HIV positive women are more likely to hold firm commitment to avoiding pregnancy than their HIV negative counterparts.

Findings from this study should be interpreted in the light of several limitations. The first limitation is the loss to follow up between rounds, which in a way reduced the sample size by more than a third. However, apart from employment status where there was higher rate of follow up among the employed, the baseline and endline distribution of background characteristics appeared similar. We, therefore, expect this not to have a significant effect on our analysis. Secondly, it is possible that using face-to-face interviews to gather information on personal matters such as pregnancy intentions and affect may have contributed to reporting bias as people might have a problem revealing them to a stranger.

Policy Implications

For providers to effectively provide family planning services and counseling to women, pregnancy intentions must be accurately assessed. While further research is needed to understand effective counseling techniques to help women with ambivalence, acknowledging that ambivalence towards pregnancy exits in SSA settings is important for the development of policy and service delivery interventions. Studies suggest that women's commitment and motivation to avoiding pregnant affects their contraceptive behaviour [35]. Women who are ambivalent about becoming pregnant/avoiding pregnancy are less likely to use contraception[35] and more likely to have gaps in contraceptive, which exposes them to the risk of unintended pregnancy [15]. Better understanding of dimensions of pregnancy intentions may improve ways of helping women to prevent unplanned pregnancies. Health care providers should discuss pregnancy risks and contraceptive options with women who are not motivated to prevent pregnancy before it occurs.

The inclusion of desire to become/avoid pregnancy or happiness at being pregnant in the DHS is highly advisable. The DHS measures the wanted status of pregnancy in the last five years, and has a question on whether becoming pregnant soon would be a problem for the woman. However, the "problem" question might not capture ambivalence as commonly understood and defined. The term "problem" is too broad and might include problems related to physical ability to carry a pregnancy as well as financial ability to rear a child. There is need for additional

measures on happiness, and other measures that assess the strength of the desire to avoid/become pregnant in capturing ambivalence in the DHS.

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