Global Scientific JOURNALS

GSJ: Volume 9, Issue 8, August 2021, Online: ISSN 2320-9186
www.globalscientificjournal.com

Title: Determinants of Contraception Among Women of Reproductive Age In The Health And Demographic Surveillance System Of Rural Siaya County, Kenya.

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Abstract

Background: Maternal and infant health outcome has globally been positively influenced by contraception, at 95% awareness, effecting the third Universal Sustainable Goal of reducing child mortality, improving maternal health and universal access to

reproductive health. However, unmet needs in the rural areas, calls for assessment of socio-economic and demographic factors determining contraception.

Methods: This cross-sectional survey on contraception was based on the population health surveys in the Health and Demographic Surveillance System, in Siaya County through 2016. Descriptive statistics reflected proportions in categories of explanatory variables. Logistic regressions displayed significant associations between covariates and contraception practice.

Results: Contraception was observed in 22,298 (57.17%) of 39,006 participants. Hormonal methods were preferred by 14,407 (36.94%) and 21,854 (53.03%) participants from the short term and long-term categories respectively, whereas, 7,888 (20.22%) and 382 (0.99%) participants preferred the non- hormonal methods from the short term and long-term categories respectively. Participants aged 15-24 years were 8,428, (21.61%) of the 39,006 participants, where 4,572, (54.24%) of them were not practicing contraception. Demographically, 15,553, (69.75%) participants were married, while 19,613, (87.16%) had at least one delivery. Contraception was significantly associated with age, parity and access to information at P<0.000. The odds of contraception in married women at 45 years and above was at (OR 0.85,95% CI 0.77 to 0.94) compared to the single women of the same age (OR 1.13,95% CI 0.99 to 1.30). Unmet needs observed in 16,708 (42.83%) of the population, included 4,572 (54.24%) youths aged 15-24 years.

Conclusion: The evidence of unmet reproductive health services and contraceptive needs in the rural region in the youths, calls for strategic, subsidized integrated reproductive health services and policies to strengthen access and utilization.

Key words: Contraception, Unmet needs, Surveillance

Introduction

Family planning (FP) services have been a global intervention for birth control alongside other reproductive health benefits to the individual, communities and societies [1]. These methods of contraception include pills, injectable and implant hormones, male and female condoms being the barrier methods, intra-uterine contraceptive device commonly known as the IUCD, withdrawal, calendar, and the Lactational Amenorrhea Method(LAM), which are natural methods, and Bilateral Tubal Ligation for females, and vasectomy for males, which are permanent surgical methods [1] [2]. Cultural and social economic factors challenge contraception uptake [3], and influence attitude towards the need of contraception practice, which deters achievement of the goal of universal access to sexual and reproductive health services[4][5]. Reproductive health stability therefore depends on promotion of access to the required information and services [6] [7] so as to achieve the Sustainable development Goals that promote global access of family planning, information and education.[8].

Current global fertility rates stand at 2.5 [9], with lower birth rates and controlled gynecological infirmities in developed countries compared to developing countries, depicting a direct relationship between the fertility rate and economic development. [10]. The 95% Universal awareness of family planning (FP) services supported by community and health facilities programs [11] [12], is conflicted by the unmet contraceptive needs which contribute to unsafe abortions and related mortalities, unplanned pregnancies, and high parity resulting to large family size [2]. The low family planning services uptake with a CPR of 58 % [13], in Kenya, noted in Turkana (10%), West Pokot (14%)

and Migori (45%) Counties, portray contraception influence by location and socio-economic status thus reflecting unmet needs in rural areas [14], [15]. This has contributed to steady population rise, from 38,601,097 in 2009 [16],to currently approximately 50.95 million, contributing to rise in poverty, deforestation, and unemployment [17], [18], [19]. Data on unmet needs in Siaya County, as captured in surveillance and population based health surveys done by the HDSS enumerations [20], [21] shows a first birth age standing between 20.8 years and 15.7 years for Siaya County [15].

The literature gap on the unmet needs as noted, calls for a better understanding of the determinants, prevalence and preference and major factors that may account for contraception practice [22]. This may in turn help achieve the broader reproductive health needs, and improve reproductive health outcomes.

This survey identified contraceptive utilization levels, and preference among women of reproductive age in the rural Siaya county HDSS. Socio-economic and demographic factors were shown to influence contraception practice.

Methods

A retrospective cross-sectional study on the determinants of contraception was based on the Siaya Health and Demographic Surveillance System (HDSS) cross-sectional health survey conducted up to 2016. The Siaya HDSS which covers the Gem, Karemo and Asembo sub-counties, serves as the provisional denominator for health based population surveys, and projections in Siaya County, with an estimated to be 932,754 people

comprising of 431,865 males (46.3%) and 500,889 females (53.7%) with an annual population growth rate of 1.7% [23]. Structured questionnaires were used to collect data from consented individuals during the population based health surveys. Information on socio-economic, demographic status as well as health seeking behavior was captured, whereas, categorized data on reproductive health practices and parity was obtained from women of reproductive age who were purposively sampled after being consented. We abstracted data from the HDSS database for analysis.

Ethical considerations

The bi-annual survey was approved by the KEMRI Scientific and Ethics Unit (SERU) via SSC NO 1801 (appendix 1). Authority to analyse data on reproductive health survey was granted by the Principle investigator and the ethical authority to conduct this study was obtained from Jaramogi Oginga Odinga University of Science and Technology Board of Postgraduate Studies. All target respondents were consented before administration of structured questionnaires, which assured them of both confidentiality and privacy by keeping their identities anonymous at all stages of the exercise.

Data analysis

We used descriptive statistics to characterize contraceptive use, and the socio-demographic profile of the women in the study. To assess the association of covariates with contraception we used logistic regression, and reported within 95% confidence intervals and 5% significance levels. We used STATA version 14.1 (STATA Corporation, College Station, Texas, USA) to conduct our analysis.

Results

Socio-demographic characteristics of the women of reproductive age

Overall, 22,289 (57.17%) out of 39,006 of the women of reproductive age in the survey reported family planning method use. 8,428 (21.61%) of the 39,006 participants were aged 15-24 years, where 4,572 (54.24%) of them not practicing contraception. Parity status observed in the 22,298 participants with contraceptive history reflected 2,685 (12.04%) having 0 births, 8,485 (38.05%) reported 1-4 births and 11,128 (49.91%) had five and above births. The 16,708 non- contraceptive active participants had a parity status of zero births by 2,586 (15.48%), 1-4 births by 6,081 (36.40%) and 5 and above births by 8,041 (48.13%) participants. Socially, 69.75% of the participants reported being married. Ever use of contraception was reported by 75.57 % of those who accessed family planning services information through social media. (Table 1).

Contraception preferences

Family planning methods choice observation revealed 14,407 (36.94%) and 21,854 (53.03%,) participants preferred the hormonal methods from the short term and long term categories respectively, whereas, 7,888 (20.22%) and 382 (0.99%) participants preferred the non- hormonal methods from the short term and long-term categories respectively. Only 36.87% of them showed preference to emergency contraception in the event of unforeseen situation (Figure 1&2).

Socio-economic determinants of contraception in married and unmarried women

There were 25,093 (64%)women who were married and 13,913 (36%) unmarried women in this study. (figure 3).

A regression analysis model in married women, showed age to statistically and significantly predict contraceptive use at P <0.001. The likelihood of contraception at 25-34 years was (OR1.89, 95% CI 1.75 to 2.03), and (OR0.85, 95% CI 0.77 to 0.94) above 45 years for married women, while unmarried women had the odds of (OR2.45, 95% CI 2.24 to2.68) and (OR1.13, 95% CI 0.99 to1.30) respectively.

Parity and access to social media information showed a statistically significant prediction of contraceptive use at P-value<0. 001.The odds of contraception in parity was (OR 0.71, 95% CI 0.60 to 0.81) for 1 birth, and (OR 1.15, 95% CI 1.07 to 1.25) for above 5 births in married women, (Table 2), and observed to be (OR 0.88, 95% CI 0.74 to 1.05) for 1 birth and (OR1.32, 95% CI 1.19 to 1.47) for above 5 births in single women. (Table 3).

The fishing or farming occupation was observed to have an interesting statistical significant association to contraception at P<0.001, odds of (OR 0.89, 95% CI 0.84 to 0.95) and (OR 0.83, 95% CI 0.76 to 0.91) for married and single women respectively. Salaried jobs, not working and being a house wife was observed to have no significant association to contraceptive use. (Table 2 and 3)

Discussion

Contraception practice prevalence was observed to be at 57.16% as demonstrated by the 39,006 respondents who had a history of contraceptive use in the HDSS reproductive health survey. This tallied the statistics from KNBS, WHO and UNFPA reflecting an uptake of contraceptives at 57.4% [12], with an estimated projection of 66% by 2030, and 70%, by 2050 [24].

Contraception was reported by 22,298 respondents, who were 57.16 % of these women of reproductive age. This trend was probably influenced by increase in women's sensitization and accelerated programs that promote contraception, like in post-partum period, as reflected in the 2017 post-partum contraceptive survey with a 87% uptake [25] [11]. Family planning methods and service uptake trends are reported to be slowly but steadily rising [26], [27].

Hormonal methods were most preferred by 14,407(36.94%) and 21,854 (53.03%) participants from the short term and long term categories respectively, whereas, non-hormonals were least preferred by 7,888 (20.22%) and 382 (0.99%) participants from the short term and long-term categories respectively. Only 36.87% of them showed preference to emergency contraception.This falls in line with a study in Uganda, that showed preference of hormonal long acting injection (Depo-Provera) among women residing in the rural areas [28], as well as the rural environment and socio-economic status influence on the rights and access of contraception and pregnancy timing [29], [30].

Individual's marital status was also observed to have an influence contraception in the women of reproductive age in this community, as the desire to reproduce and parity merged into the socio-economic and cultural status [31].

Among the married women, age parity and access to contraceptive information predicted high contraceptive use compared to the unmarried women, while occupation played no role whatsoever. A similar study In the Ugandan HDSS ,about low uptake of FP services revealed FP use predicators to be women of lower age and equally those who accessed information on reproductive health [32]. The findings and outputs in studies done in South Africa and in the Ugandan HDSS on predictors of contraceptive use guided policy makers recommendations, to focus on age and exposure to mass media as significant determinants of contraception [27], [33] . Studies in a rural hospital in Kenya also determined that women of lower age and those who had education on contraception were the ones with a higher likelihood of practicing contraception [11],[34]. Career goals in an economic growing society had low or no influence the contraception practice[19],[35].

The age of married or unmarried females influenced contraceptive use where those between 25-34 years were more likely to report contraception compared to those ages 35 and above respectively, $P<0.001$. The same sentiment on contraceptive use by Njotang, reflects that the older the woman, the less likely they are to use contraceptives [36] .

Individual parity level seemed to have an influence on contraception decision [30]. Married or unmarried women reporting 1 delivery in parity, were observe to less likely use contraception, compared to women reporting parity above 2 deliveries $P<0.001$. This

reflects the socio-culture status of wanting children in low parity and reduced chances of reproduction in high parity [37].

Limitations

The interpretation of this study findings was based on the public health cross-sectional surveys done in the bi-annual HDSS rounds, between April and July up to 2016.

The survey captured data on Reproductive health status of women of reproductive age which was limited in choice of variables. The cross-sectional survey having been done in a rural setting, lacks comparison with an urban setting, limiting its generalization to both urban and rural populations. Data collected from the women was self-reported which has some social desirability factors in play. Since women of reproductive age were the main respondents, it was assumed that they all gave an accurate account of their experiences regarding their contraception experiences.

Conclusion

There is evidence of unmet contraception needs reflected by the conflicting high awareness to the actual practice, with the youth being the most affected population. This could be due to their high sexual activity, with early debut. The cultural influence for family continuity in the rural areas also fuels family reproduction rates. Equally, the unmet need for contraceptive use has also been demonstrated to be higher in the rural areas as compared to the urban settings.

Unmet contraception gap in the rural set up is still a challenge that needs intervention in adolescents between 15-24 years, as reflected in the studies by Tiruneh, Chuang, Ntenda, & Chuang, (2016), thus strongly suggesting the need to prioritize this group to impact on the unmet need.

The high preference of hormonal methods was noted alongside the condoms due to their dual protection against sexually transmitted infections. Use of these methods can be maximized, by encouraging correct use and subsidizing cost to ease access. There is need to majorly consider good access to both female and male condoms based on their reported advantage of dual protection as a contraceptive as well as sexually transmitted disease control measure.

The observed contraceptive use influence following access to information through phones radios and television strongly suggests the need to major on media as a source of information on the importance of family planning practice in the society. This could be guided by other socio-demographic and economic characteristics of the individual, family and society so as to create the needed impact when sharing the important information on reproductive health and the impact of the early sexual debut among adolescents, who are among the population of youths that experience the abortions and maternal morbidities and mortalities. This then makes the population that needs to be targeted in the family planning services policy implementation plan

Acknowledgements

Much gratuity goes to the community and volunteers from the HDSS area in Siaya for their participation and support of this study, and the other general public health surveys. Appreciation goes to Dr. Godfrey Bigogo of KEMRI-DGHP, for authorising use of data collected under the Health Demographic Surveillance System (HDSS), and the KEMRI staff participation in data management for analysis. Appreciation for work and support of publication of this manuscript goes to the KEMRI and JOOUST institution and staff, for mechanical supervisory guidance and contribution towards achieving the set objectives during this survey. The findings and conclusions in this survey are purely based on authors and do not necessarily represent the views of KEMRI and JOUUST institutions.

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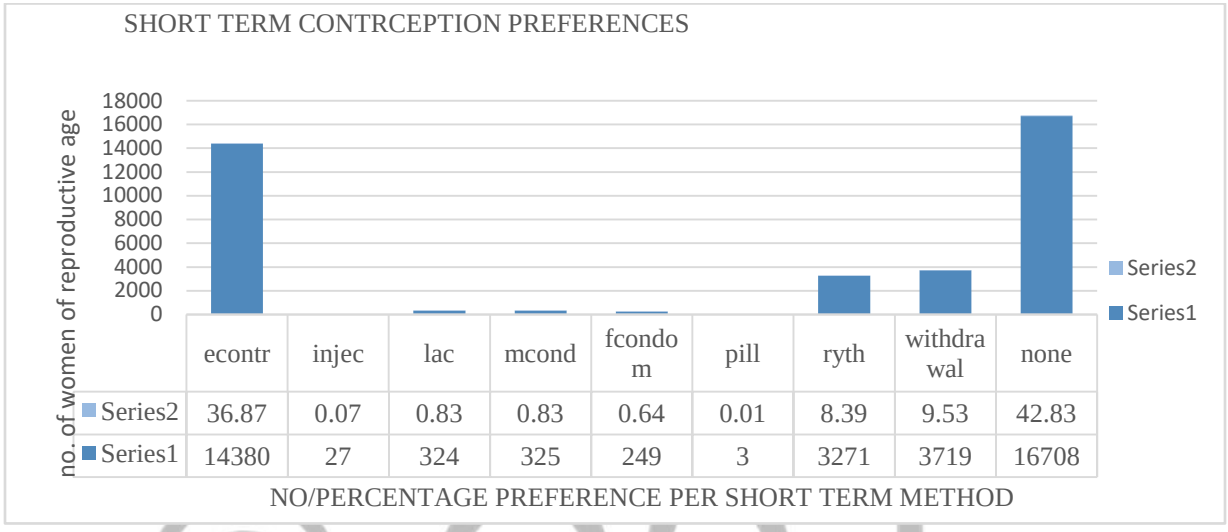
Tables for the main paper

Table 1: Socio-demographic characteristics of the study population (**N=39,006**)

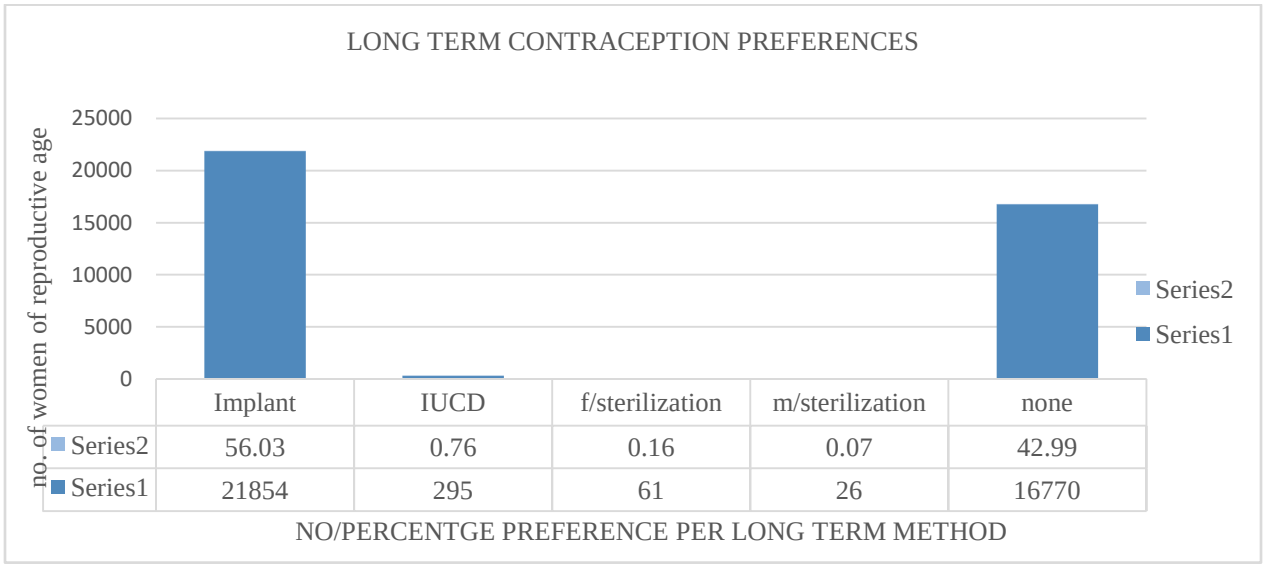
Variable/Factor	Total(N=39,006)	No (n=16,708)42.8%	Yes (n=22,298)57.17%	p-value
Age categories				<0.001
15 – 24 yrs.	8428(21.61)	4572(27.36)	3856(17.29)	
25 – 34 yrs.	14128(36.22)	4805(28.76)	9323(41.81)	
35 - 45 yrs.	12801(32.82)	5341(31.97)	7460(33.46)	
Above 45 yrs.	3649(9.35)	1990(11.91)	1659(7.44)	
Marital status				<0.001
Single	13,913 (35.67)	7,168 (42.90)	6,745 (30.25)	
Married	25,093 (64.33)	9,540 (57.10)	15,553 (69.75)	
Parity				<0.001
0 births	5,271 (13.51)	2,586 (15.48)	2,685(12.04)	
1 birth	2,071 (5.31)	1,196 (7.16)	876(3.92)	
2-4 births	12,495 (32.03)	4,885(29.24)	7,610(34.13)	
5< births	19,169 (49.14)	8,041 (48.13)	11,128 (49.91)	
Occupation				<0.001
Farmer/Fisher	23,022 (59.02)	10,250 (61.35)	12,772 (57.28)	
Business owner	8,288 (21.25)	3,299 (19.75)	4,989 (22.37)	
Housewife/others	4,320 (11.08)	1,807(10.82)	2,513(11.27)	
Skilled/salaried	2,354 (6.03)	921 (5.51)	1,433 (6.43)	
None	1,022 (2.62)	431 (2.58)	591 (2.65)	
Access to information?				<0.001
No	1,089(25.87)	4,642(27.78)	5,447(24.43)	
Yes	28,917(74.13)	12,066(72.22)	16,851(75.57)	

Figure 1: Preferences of short term contraception methods



	econtr	injec	lac	mcond	fcondom	pill	ryth	withdrawal	none
Series2	36.87	0.07	0.83	0.83	0.64	0.01	8.39	9.53	42.83
Series1	14380	27	324	325	249	3	3271	3719	16708

Figure 2: Preferences of long term contraception methods



	Implant	IUCD	f/sterilization	m/sterilization	none
Series2	56.03	0.76	0.16	0.07	42.99
Series1	21854	295	61	26	16770

Figure 3: Contraception practice per marital status

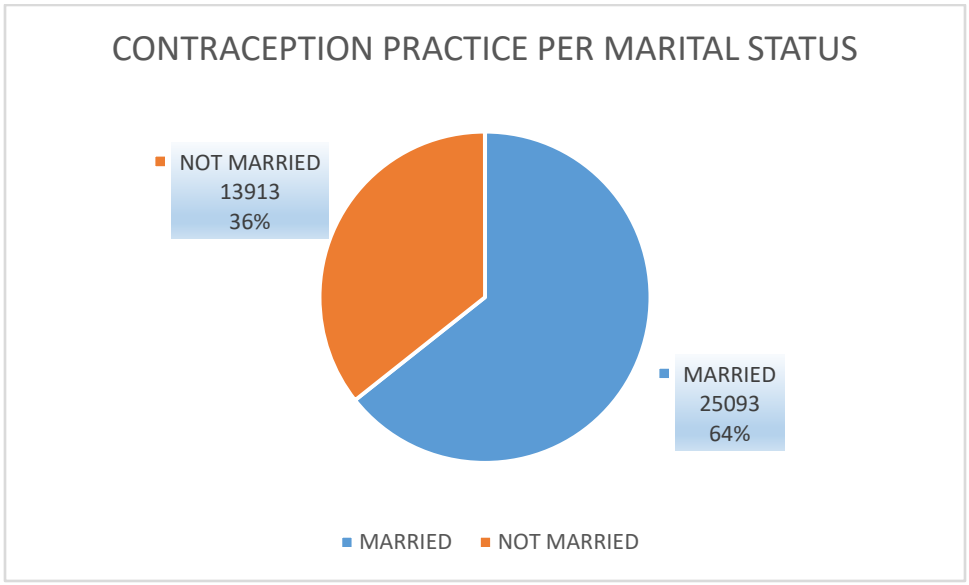


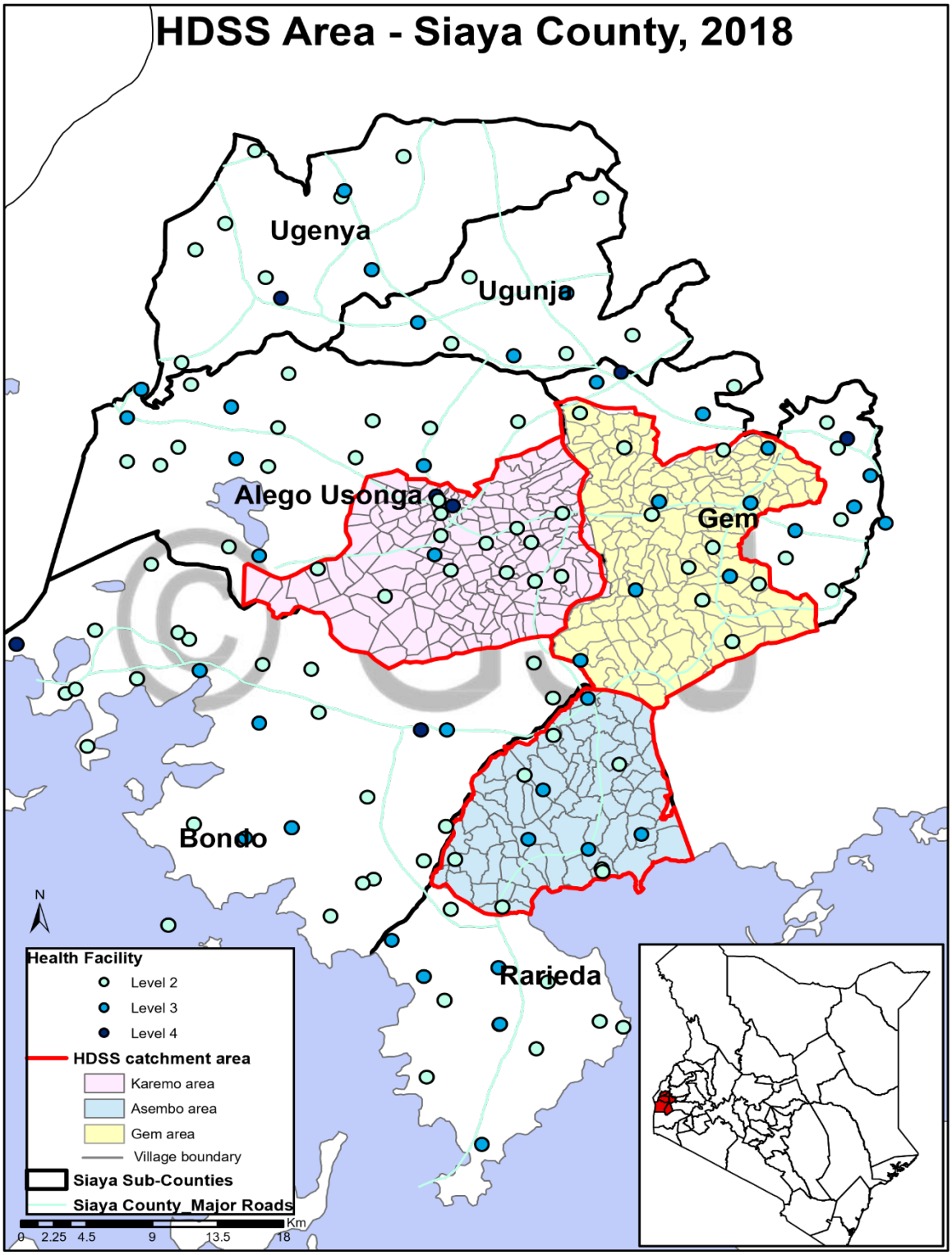
Table 2; CONTRACEPTIVE USE IN MARRIED WOMEN OF REPRODUCTIVE AGE

VARIABLES		Univariate analysis OR(95%CI)	P	Multivariate analysis OR(95%CI)	P
AGE					
15-24yrs	1			1	
25-34yrs		1.98(1.84 to 2.18)	0.000	1.89(1.75 to 2.03)	<0.001
35-45yrs		1.49(1.38 to 1.60)	0.000	1.43(1.33 to 1.54)	<0.001
>45yrs		0.85(0.78 to 0.94)	0.002	0.85(0.77 to 0.94)	<0.001
PARITY					
0 births	1			1	
1 birth		0.66(0.57 to 0.75)	0.000	0.71(0.62 to 0.81)	<0.001
2-4 births		1.30(1.19 to 1.41)	0.000	1.18(1.08 to 1.29)	<0.001
5 and above births		1.22(1.12 to 1.32)	0.000	1.15(1.07 to 1.25)	<0.001
OCCUPATION					
Business person	1			1	
Farmer/Fisher		0.85(0.80 to 0.91)	0.000	0.89(0.84 to 0.95)	<0.001
H/w and other		0.97(0.88 to 1.07)	0.596	0.98(0.89 to 1.08)	0.783
Not working//NA		0.91(0.77 to 1.07)	0.286	1.01(0.85 to 1.20)	0.895
salaried worker		1.01(0.91 to 1.14)	0.805	1.01(0.91 to 1.14)	0.746
INFORMATION					
NO	1				
YES		0.85(0.80 to 0.90)	0.000	0.85(0.80 to 0.90)	<0.001

Table 3; CONTRACEPTIVE USE IN UNMARRIED WOMEN OF REPRODUCTIVE AGE

VARIABLES		Univariate analysis OR(95%CI)	P	Multivariate analysis OR(95%CI)	P
AGE					
15-24yrs	1			1	
25-34yrs		2.61(2.38 to 2.85)	0.000	2.45(2.24 to 2.68)	<0.001
35-45yrs		1.67(1.52 to 1.82)	0.000	1.67(1.52 to 1.82)	<0.001
>45yrs		1.08(0.85 to 1.23)	0.240	1.13(0.99 to 1.30)	0.080
PARITY					
0 births	1			1	
1 birth		0.78(0.65 to 0.92)	0.004	0.88(0.74 to 1.05)	0.175
2-4 births		1.85(1.66 to 2.05)	0.000	1.63(1.45 to 1.82)	<0.001
5 and above births		1.46(1.32 to 1.62)	0.000	1.32(1.19 to 1.47)	<0.001
OCCUPATION					
Business person	1			1	
Farmer/Fisher		0.81(0.74 to 0.88)	0.000	0.83(0.76 to 0.91)	<0.001
H/w and other		0.84(0.74 to 0.86)	0.011	0.83(0.73 to 0.94)	0.005
Not working//NA		0.92(0.73 to 1.14)	0.460	1.08(0.86 to 1.36)	0.506
salaried worker		1.06(0.91 to 1.25)	0.415	1.06(0.91 to1.25)	0.426
INFORMATION					
NO	1			1	
YES		0.83(0.77 to 0.89)	0.000	0.81(0.75 to 0.88)	<0.001

Figure 4: Map of the HDSS study area



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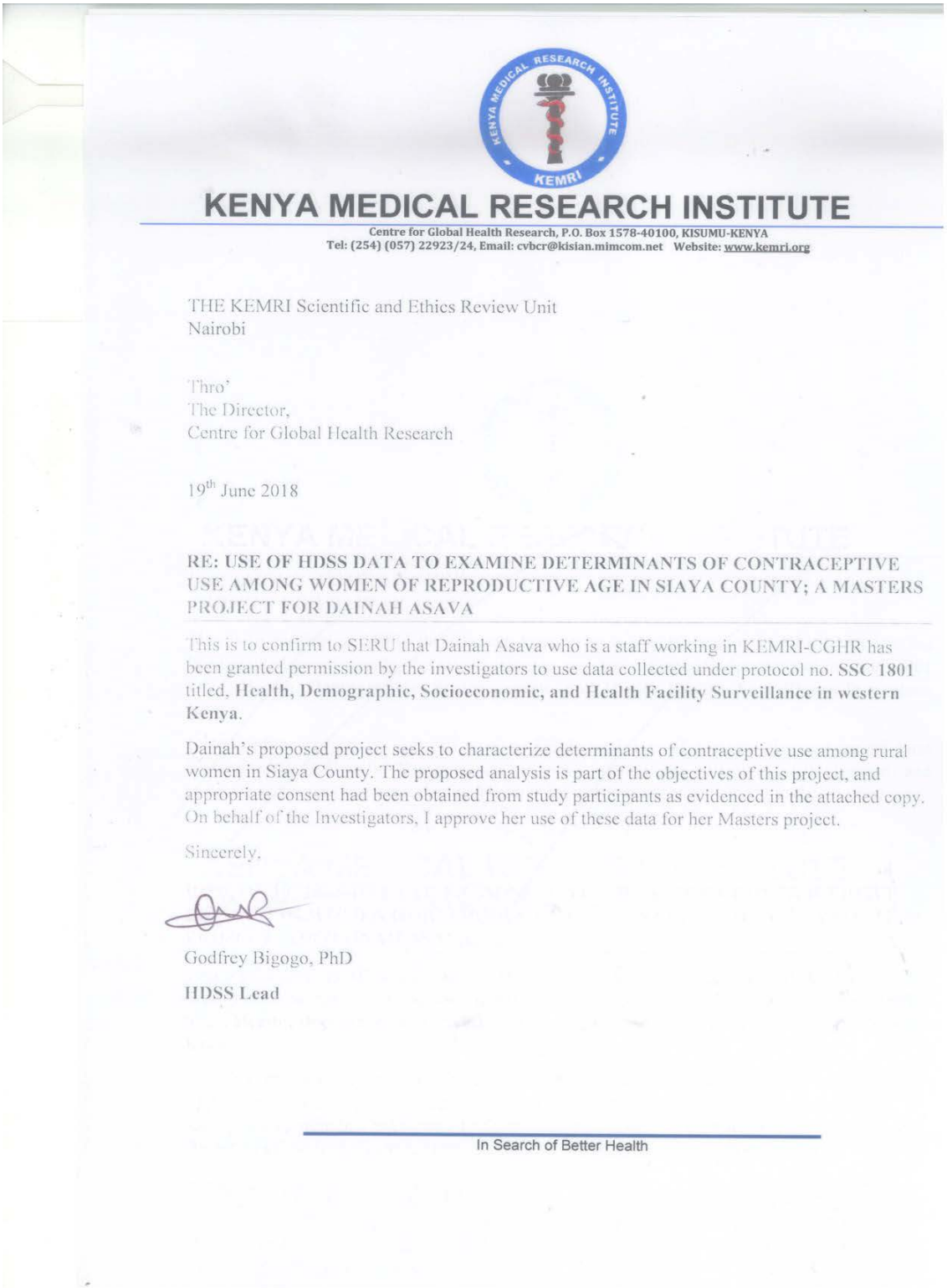
APPENDICES

Appendix 1: SSC protocol approval by KEMRI SERU



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THE KEMRI Scientific and Ethics Review Unit
Nairobi

Thro'
The Director,
Centre for Global Health Research

19th June 2018

RE: USE OF HDSS DATA TO EXAMINE DETERMINANTS OF CONTRACEPTIVE USE AMONG WOMEN OF REPRODUCTIVE AGE IN SIAYA COUNTY; A MASTERS PROJECT FOR DAINAH ASAVA

This is to confirm to SERU that Dainah Asava who is a staff working in KEMRI-CGHR has been granted permission by the investigators to use data collected under protocol no. **SSC 1801** titled, **Health, Demographic, Socioeconomic, and Health Facility Surveillance in western Kenya.**

Dainah's proposed project seeks to characterize determinants of contraceptive use among rural women in Siaya County. The proposed analysis is part of the objectives of this project, and appropriate consent had been obtained from study participants as evidenced in the attached copy. On behalf of the Investigators, I approve her use of these data for her Masters project.

Sincerely,

Godfrey Bigogo, PhD

HDSS Lead

In Search of Better Health

Appendix1: Data abstraction tool for secondary analysis

DATA ABTRACTION FORM FOR DETERMINANTS OF CONTRACEPTION AMONG WOMEN OF REPRODUCTIVE AGE IN THE HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM OF RURAL SIAYA COUNTY, KENYA.

PARTICIPANT PID NO:

A. DEMOGRAPHIC FACTORS

1: Age in years……..

2: SEX : male female

3. Marital status

- Married
- Single
- Divorced
- Widowed

FAMILY PLANNING METHOD KNOWLEDGE AND USE

1. Ever heard of family planning : Yes No

2. Family planning method preference and use :

	FAMILY PLANNING METHOD	PREFERED	USE
TYPE:	SHORT TERM		
METHOD:	Emergency contraceptive		
	Daily pills		
	Female condoms		
	Male condoms		
	Injectable		
	NONE		
TYPE	LONG TERM		
METHOD	Intra-Uterine Device (COIL)		
	Implant		
	BTL (FEMALE)		
	VASECTOMY (MALES)		
	NONE		

B. SOCI-ECONOMIC DETERMINNTS OF CONTRACEPTION

1. OCCUPATION

□ self-employed □ employed

□ skilled labour(carpenter/tailor) □ unskilled labour (shamba/construction)

□business owner □commercial farming (selling maize)

□Subsistence farming □ house wife

□not working □ salaried worker (teacher/nurse/office)

□ fisher □small business

□ other

2. . Number of births …….

3. Means of communication/information and entertainment owned (tick all that apply)

□ Phone □ radio □ television