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Knowledge, Attitudes and Practicesof Nurses in Promoting Antenatal Exercises in Kakamega County, Kenya

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Abstract: *Antenatal exercises have proven to be beneficial. Less than 50%of pregnant women worldwide meet exercise recommendations. Sixty-seven (67%) of deliveries in Kakamega County are conducted by a skilled provider (Nurse/midwife) and occur in tier 2 and 3 health facilities. Maternal mortality in Kakamega County is 40:100,000 live births. The study was aimed to determine Nurses'/midwives' knowledge, attitude and practice in promoting antenatal exercise in tiers 2 and 3 health facilities in Kakamega County. The research question was, what is the knowledge, attitudes and practices of nurses in promoting antenatal exercises in Kakamega County? The researcher hypothesized that there would be no significant differences in knowledge levels of Nurses, their attitudes and practices in tier 2 and 3 health facilities in Kakamega County as regards antenatal exercises. A descriptive, cross-sectional study design was used with mixed methods. Data was collected using a questionnaire and an observation checklist. Purposive method (the only tier 3Public County hospital) and systematic sampling was used to select the study sites (the tier 2 Sub-county public hospitals and private hospital). Stratified proportionate probability sampling method was used to select the total number of nurses'/midwives. Data was analyzed using Statistical Package for Social Sciences software (SPSS version 25.0).Descriptive statistics such as; frequency, percentage, mean and standard deviations were used, n=209. Hypothesis was tested using ANOVA. The results showed that Nurses had lowknowledge164 (78.9%), good attitudes 202 (98.1%) and poor practices, 1/5 themes (20%) according to Blooms cut of points in terms of promoting antenatal exercises. On knowledge, masters group had the least mean of 17.67, SD=1.53 and CI=13.9-21.5 while PHD group had the highest mean of 19.5,SD=6.24 and CI=9.6-29.4. There was no significant difference in knowledge among Nurses P=0.784,np2=0.005),attitudes were different at (P=<0.001,np2 =0.225),there was significant association between knowledge and practice (r=0.156, p=0.026) but there was no association between attitude and practice towards antenatal exercises (r=0.25, p=0.934).On multiple regression, knowledge was a better predictor of promoting antenatal exercises (p=0.036) than attitude. The study concluded that, nurses have a good attitude in promoting antenatal exercises in Kakamega County, however the low knowledge affects their practice towards the same. The study therefore recommends a review of the nurse's curriculum and dissemination of guidelines on antenatal exercises for better maternal outcomes.*

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I. Introduction

Antenatal period is from conception to parturition while exercise, is a subcategory of physical activity that is planned, structured, repetitive and purposeful.WHO recommends 30mins of exercise most days of the week during pregnancy just like for general population unless there are contraindications. During pregnancy, relaxin hormone tend to support and justify a lay back and relaxation situation. Numerous studies have shown antenatal exercises to be beneficial. Exercise has been documented as first line treatment for most of the ailments. Nurses are on the forefront when it comes to provision of antenatal services. Scanty information exist in Kenya on knowledge, attitudes and practices of Nurses in terms of antenatal exercises. Anecdotal sources reveal that exercise prescription is sub-optimal in Kakamega County yet it is one of the highly ranked Counties in terms of poor maternal outcomes. The current study aims to createawareness on the growing evidence of importance of antenatal exercise by determining the knowledge, attitudes and practices of nurses in promoting antenatal exercise.

II. Material And Methods

This cross-sectional descriptive study was carried out among nurses working in antenatal clinics in Kakamega County. They were selected from both public and private tier 2 and 3 health facilities**.** They included; Kakamega County teaching and referral Hospital, Shibwe Sub-County Hospital, Iguhu Sub-County Hospital,Lumakanda Sub-County Hospital,Matung Sub-County Hospital,Imanyala Sub-County Hospital and St.Mary'sMumias Hospital. The study took place from June 2018 to December 2018. A total of 240 nurses both males and females were to participate in this study**.**

Study Design: Cross-sectional study with mixed methods was done.

Study Location: Kakamega County in tier 3 (1 County Hospital) and tier 2 Hospitals (6 Sub-County Hospitals).

Study Duration: June 2018 to December 2018.

Sample size: 240 nurses.

Sample size calculation: The sample size was calculated using Taro Yamane (1967) formulae cited by Singh &Masuku (2014) since the study population(480) was known from the County human resource data base.

$$n = \frac{N}{1 + N(e)^2}$$

Confidence interval was set at 95%. The sample size actually obtained for this study was 218 but 10% attrition rate (22) was considered which increased the sample size to 240.

Subjects & selection method:The study population was drawn from the nurses working in tier 2 and 3 in Kakamega County. Kakamega County was purposively selected since it's the only tier 3 Hospital in the County. The 6 tier 2 Hospitals were systematically selected from the 12 Sub-County Hospitals in Kakamega County including 2 private Hospitals. The nurses were selected by proportionate probability sampling to ensure equal representations of total nurses per health facility and also of all nursing cadres.

County Hospital - 149 nurses
Sub-County Public Hospital - 40 nurses
Private Sub-County Hospital – 51 nurses

Inclusion criteria:

1. Nurses'/midwives working at hospital tiers 2 and 3 private and public health facilities in Kakamega County;
2. Either gender;
3. Those who were (EN), registered (KRN/KRCN), BScN and MScNnurses'/midwives;
4. The nurses'/midwives who were deployed in antenatal clinics during the time of study;
5. Nurses'/midwives who voluntarily gave consent to participate in this study.

Exclusion criteria:

1. Nursing students in antenatal clinics placement doing basic trainings;
2. Nurses'/midwives who were on maternity, sick and annual leave during the period of study.
3. Antenatal care nurses'/midwives who were not involved directly in immediate patient management such as those permanently deployed in radiology, minor theatre and the like.
4. All antenatal clinics nurses'/midwives who declined to participate in the study.

Procedure methodology

Permission to conduct the research was requested from the following authorities:

The Ethics and Research Council (ERC)of the Graduate School ofMasindeMuliro University of Science and Technology, School of Public Healthandthe Ministry of Education, Science and Technology. NACOSTI (National Commission for Science, Technology and innovation).

Relevant health authorities, the County Government of Kaka mega, the Medical Superintendents, the MOHs at tiers 2 and 3 public and private health facilities in Kakamega County, Kenya.

The researcher also adhered to the principles of scientific integrity and honesty. All sources used in the study were acknowledged. Ethical virtues of autonomy, respect, beneficence, Non-maleficence, justice and confidentiality were held.

Pilot study was carried out to test the study instrument, questionnaire and split half method was used to test its reliability. A written consent form was obtained from the study subjects. There were nine questions in this part, which interrogated the knowledge of nurses on the different type of antenatal exercises, benefits, effects on the fetus and mother associated, awareness of policies, procedures or operational directives, assessment of whether a pregnant woman adheres to recommended antenatal exercises or not, major barriers/ hindrances to successful implementation of antenatal exercises.

Statistical analysis

Descriptive statistics namely the mean, standard deviation and frequency distributions were used to describe the characteristics of the sample from which the data was collected and ANOVA was applied to test whether differences between variables was significant at a statistical significance value of 0.05 and 95% level of confidence. Inferential statistics of f-test was used to test the associations between the nurses'/midwives' level of knowledge, their attitudes and actual practices of antenatal exercises. Data was analyzed using Statistical Package for Social Sciences software (SPSS version 25.0).

III. Result

The response rate was 209/240 (87%). Findings in table 1 revealed that most 126 (60.3 %) were females while 83 (39.7%) were males.Results on their professional level revealed that 165(78.9%) were Nurse Diploma holders, 37 (17.7%) were Nurse Degree holders, 3 (1.4%) had a Nurse Masters' Degree, while 4(1.9%) had a Ph.D. Distribution of age bracket showed that majority 114 (54.5%) were aged between 26-35 years. The working experience statistics showed that majority 112 (53.6%) had worked less than one year.

Table 1: Background characteristics of respondents

		Frequency	Percent
Professional Level	Nurse Diploma	165	78.9%
	Nurse Degree	37	17.7%
	Nurse Masters	3	1.4%
	PhD	4	1.9%
	Total	**209**	**100.0**
Gender	Male	83	39.7%
	Female	126	60.3%
	Total	**209**	**100.0**
Facility type	Public	158	75.6%
	Private	51	24.4%
	Total	**209**	**100.0**
Age bracket	Below 25 years	34	16.3%
	26-35 years	114	54.5%
	36-45 years	39	18.7%
	Over 46 years	22	10.5%
	Total	**209**	**100.0**
Experience	Less than 1 year	112	53.6%
	1-3 years	67	32.1%
	3-5 years	16	7.7%
	More than 5 years	14	6.7%
	Total	**209**	**100.0**

Nurses' knowledge level in promoting antenatal exercises

An individual's habits towards something were influenced by his/her knowledge of that particular thing (Ryan, 2009). Also, an individual's exercise habits are influenced by knowledge of exercise (Ezedum, 2002). This means that an individual's knowledge guides his/her behavior or reactions to some events (Ryan, 2009). Knowledge is the remembering or recall of a material that has been learned previously (Akudolu, 2005). All what was needed was the ability to remember or to bring to mind the learned information or skill exactly the way it was learnt (Brown, 2005). Facts such as names of people and objects belong to this aspect of learning (Akudolu, 2005). Once a person's name is learned, it could be reproduced when needed.

Vainoioh (2002) noted that in normal conversation, knowledge was used to mean: knowing that (facts and information) and knowing how (the ability to do something). When one had this type of knowledge, then he/she would be able to express it. Stanley (2002) defined knowledge as a familiarity with someone or something that could include facts, information, descriptions or skills acquired through experience or education. This was in line with Brown (2005) who opined that knowledge was the facts, information, understanding and skills that a person had acquired through experience or education. Ezedum (2002), in his view, explained that knowledge was a prerequisite for any action (or practice). In this study, knowledge meant familiarity, awareness or understanding gained through experience, study or specific information about antenatal exercises. Knowledge of antenatal exercises therefore meant familiarity, awareness or understanding that has been perceived or learned about planned and selected bodily movement produced by contraction of muscles that required energy expenditure which was low, moderate or high intensity that aims at improving fitness of a pregnant mother.

The first research question of the study was to find out if nurses in health facilities in Kakamega County had the basic knowledge of antenatal exercises.

Table 2 shows the nurses' knowledge level of antenatal exercises. Of the 209 respondents, 114(54.5%) said that they disagreed exercise reduced risk of back pain during pregnancy. Results showed that, of the 209

respondents, majority 103 (49.3%) agreed that exercise causes more rapid postnatal recovery. From this analysis, the majority of the nurses were aware that exercise causes more rapid postnatal recovery. The results showed that from the 209 respondents, 108(51.7%) disagreed about knowing different types of antenatal exercises.

Furthermore, from the results, the majority of the respondents didn't know different types of antenatal exercises. The results showed that from the 209 respondents, 113(54.1%) agreed that exercising strengthens pelvic floor muscles in pregnancy. From the results, the majority of the nurses knew that exercising strengthened pelvic floor muscles in pregnancy from the 209 respondents, 107(51.2%) disagreed on knowing the ACOG 2002 guidelines for antenatal exercises.86 (41.1%) disagreed that exercise caused premature labor during pregnancy. The results showed that, of the 209 respondents, 137 (65.6%) disagreed that exercise caused uterine contractions during pregnancy as shown in table 4.3.

Table 2: Knowledge levels on benefits and contraindications of antenatal exercises (N=209)

	Disagree		Undecided		Agree	
Variable	Count	Row N %	Count	Row N %	Count	Row N %
Exercise reduce risk of back pain during pregnancy	114	54.5%	23	11.0%	72	34.4%
Exercise causes more rapid postnatal recovery	65	31.1%	41	19.6%	103	49.3%
I know different types of antenatal exercises	108	51.7%	8	3.8%	93	44.5%
Exercising strengthens pelvic floor muscles in pregnancy	90	43.1%	6	2.9%	113	54.1%
I know ACOG 2002 guidelines	107	51.2%	17	8.1%	85	40.7%
Exercise causes vaginal bleeding during pregnancy	143	68.4%	16	7.7%	50	23.9%
Exercise causes premature labour during pregnancy	86	41.1%	68	32.5%	55	26.3%
Exercise causes abdominal pain during pregnancy	95	45.5%	14	6.7%	100	47.8%
Exercise causes uterine contractions during pregnancy	137	65.6%	27	12.9%	45	21.5%

Respondents answered a total of nine closed-ended questions. Each response was given a mark based on the level on the 5-point Likert scale with the anchors being Disagree=1 to Agree=3 and vice versa for questions that were reverse coded. Scale scores were computed by adding responses to the nine questions resulting in a minimum possible score of 9 and a maximum of 27. The score was classified into 2 levels according to the Blooms' (1956) cut off point as follows:

- Good Knowledge (above 60%) 17 or more score
- Poor Knowledge (Below 60%) 16 or less score

From the results in figure 1, majority of the health care professionals had poor knowledge of antenatal exercises 164 (78.5%) scoring 16and below, while only 45 (21.5%) had good knowledge of antenatal exercises scoring 17 and more as illustrated below.

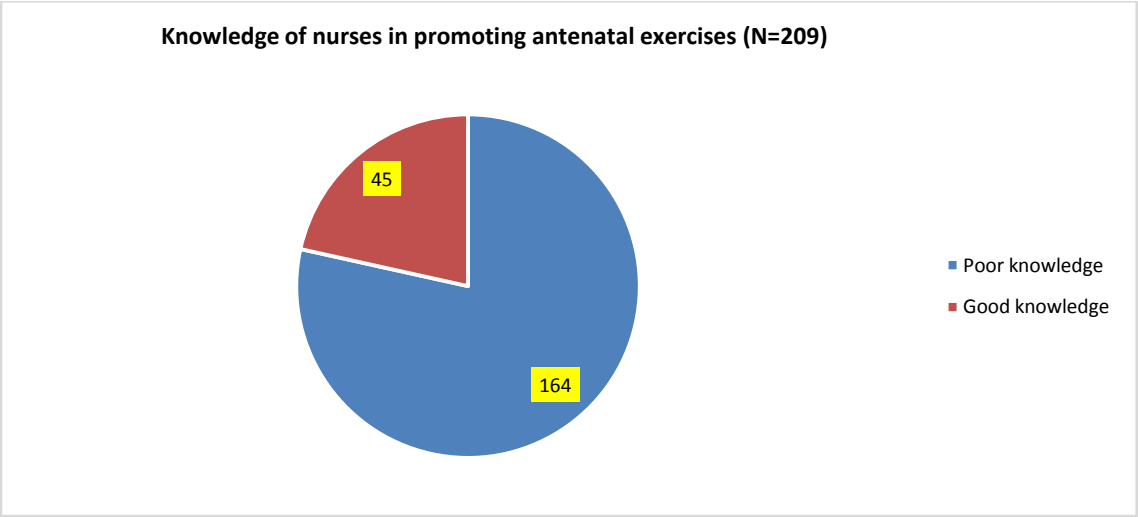

Figure 1: Nurses Knowledge of antenatal exercises

Table 2: Descriptive Statistics on Knowledge of antenatal exercises

Knowledge Items	n	M	SD	Skewness	Kurtosis
Exercise reduces risk of back pain during pregnancy	209	1.8	.924	.411	.335
Exercise causes more rapid postnatal recovery	209	2.18	.880	-.001	-.431
Exercising strengthens pelvic floor muscles in pregnancy	209	1.98	.982	-.226	1.498
Exercise causes vaginal bleeding during pregnancy	209	2.44	.854	-.377	1.831
I know ACOG 2002 guidelines	209	1.89	.955	-.044	.948
Exercise causes premature labor during pregnancy	209	2.15	.810	-.604	-.627
Exercise causes abdominal pain during pregnancy	209	1.98	.968	.505	-.495
Exercise causes uterine contractions during pregnancy	209	2.44	.825	-.732	.163
Note. M= Mean; SD= Standard deviation					

First null Hypothesis in the study

The first Null hypothesis stated that:

H_0:1 There exist no significant differences in knowledge among nurses in promoting antenatal exercises in tier 2 and 3 health facilities in Kakamega County, Kenya.

The descriptive statistics associated with knowledge of antenatal exercises across the four professionals' groups were reported. It was seen that the master's group was associated with the numerically smallest mean of knowledge of antenatal exercises (M=17.67 SD=1.53 CI=13.9-21.5) and the PhD group was associated with the numerically highest mean of knowledge of prenatal exercises (M=19.5 SD= 6.24 CI=9.6-29.4). In order to test the hypothesis that the professional level (Nurse Diploma, Nurse Degree, Nurse Master's and Ph.D.) had an effect on knowledge of prenatal exercises, a between-groups ANOVA was performed.

Prior to conducting the ANOVA, the assumption of normality was evaluated and determined to be satisfied as the four groups distributions were associated with skew and kurtosis less than |-1.0| and |1.0| respectively (Howel, 2006). Furthermore, the assumption of homogeneity of variances was tested and satisfied based on Levene's F test, F test (3, 205) = 1.433, p= .234.

The independent between-group ANOVA yielded a non- statistically significantly effect, F (3, 205) = .357, p = .784, η_p^2= .005. Statistical power was not adequate and was equal to .119. Thus, the null hypothesis of no significant differences in knowledge of antenatal exercises among nurses of different professional levels in Kakamega was accepted, and only 0.5% of the variance in knowledge was accounted for by group membership.

Table 3: Descriptive statistics for knowledge scores among nurses

Professional cadre	n	M	SD	CI 95%	Skewness	Kurtosis
Nurse Diploma	165	18.84	3.45	18.3-19.3	-.220	.258
Nurses Degree	37	19.32	3.46	18.2-20.5	-.0.48	.467
Nurses Masters	3	17.67	1.53	13.9-21.5	-.935	.589
PhD	4	19.50	6.24	9.6-29.4	.238	.391

The null hypothesis was accepted ($p > 0.05$) leading to the conclusion that there exist no significant differences in knowledge of antenatal exercises amongst nurses in tier 2 and 3 health facilities in Kakamega County, Kenya.

IV. Discussion:

The first objective of the study was to determine the nurses/midwife's knowledge level on antenatal exercises in tiers 2 and 3 health facilities in KakamegaCounty. The current study noted that 84.1% of the respondents in both hospital categories were in agreement that nurses/midwives were in the best position to offer the best guide to antenatal exercises. This finding is in line with ACSM that noted that nurses often evaluate risk factors for cardio vascular disease during routine visits like the weight, height, blood pressure and pulse measurements (ACSM, 2016).

Although caregivers have been advising women about appropriate exercise in pregnancy for centuries, their knowledge about its psychological and physiological effects is still limited (Kane, 2006). The findings of this study was in line with this statement by Kane of 2006 since majority of the nurses were not knowledgeable on maters antenatal exercises, scoring less than 16 points according to bloom. Literature suggested that nurses sometimes thought that they were inadequately trained or experienced in prescribing physical exercise (Persson…et al., 2013). This study confirmed the same since majority indicated that they would like to be trained in antenatal exercise.

Selleck and Redding (1998) conducted a study looking at the knowledge and attitudes of 392 registered nurses providing care on a birthing unit. Although 72% of the nurses reported receiving information in Nursing School about general antenatalexercise, only 48% reported specific information on antenatalexercise. Overall, the nurses had limited knowledge about antenatal exercise. The results of this study agrees with the findings of

Selleck and Redding ,1998.In a study done among antenatal mothers ,the knowledge of women on exercise during pregnancy was less than average (Sujindra…et al 2015).

V. Conclusion:

Within the limitations of this research and based on all the items used to assess knowledge, it was concluded that nurses have low knowledge in promoting antenatal exercises in tier 2 and 3 health facilities in Kakamega County and that there was no differences in their knowledge levels in view of the various cadres

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