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RESEARCH ARTICLE

KNOWLEDGE ON EFFECTS OF SELF-MEDICATION AMONG COMMUNITY MEMBERS IN NANDI COUNTY, KENYA.

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Abstract

Objective. The objective of the study was to determine the knowledge on effects of self-medication by the community in Nandi county Kenya. **Design.** The study was a descriptive cross-sectional study and Quantitative methods were adopted. **Setting.** The study was carried out in Nandi County. Nandi County was purposively sampled. The respondents were sampled by stratified random sampling among adult patients attending outpatient department at Mosoriot Sub-County Hospital, Nandi County, Kenya; the researcher divided the population into strata and drew a predetermined number using simple random sampling ($n = 248$) **Analysis.** Data was analyzed through descriptive statistics, chi-square test of independence and logistic regression. **Main outcome measures.** Knowledge on effects of self-medication **Results.** 79% (196) said they always use medicine without the doctor's prescription. 63.3% (157) said that symptomatic diagnosis was a good way to confirm illness. Although 66.1% said they know the effects of using drugs without prescription, results revealed that 75% of the respondents that poor knowledge of the effects of self-medication. Chi square analysis showed that there was no statistically significant relationship between the knowledge on effect of self-medication and gender $\chi^2 (1, N=248) = 0.22$. Logistic regression was done and respondents who were single were 0.4 times more likely ($OR=0.42$, 95% C.I, 0.06-2.84) to belong to the 'poor knowledge' group than the 'good knowledge' group compared to the widowed **Conclusion.** That sensitization of the community/ public on self-medication is important.

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Introduction:-

Background

Self-medication refers to the use of any medication herbs, traditional medications or home remedies without consulting the health care providers. Self-medication remains a problem in Kenya, Africa and even other parts of the world (Gamez, *et al.*, 2006). Medicines for self-medication are often referred to as Over the Counter (OTC) drugs. These are available from pharmacies without a doctor's prescription (Pwar *et al.*, 2009). The FDA (2006) defines OTCs as a drug product marketed for use by the consumer without the intervention of a health care professional in order to obtain the product. Regarding the classification of medicines, it seems that people do not distinguish between prescription medicines and OTC medicines (Bjornsdottir *et al.*, 2009).

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Kazeem *et al.*, (2009) noted that there exists knowledge deficit in large number of the population. A good number of people practicing self-medication did not really know what they were treating. People identified diseases using wrong clinical signs and symptoms which were actually defining other diseases. They did not seek information from the health care providers on the presentation of certain infections. They instead relied on relatives, friends, parents and grandparents who most of the time gave wrong information which was misleading and in turn recommended wrong treatment for the supposed illnesses.

Educational levels of individuals seemed to influence how well they were likely to identify the signs and symptoms of disease i.e. those with higher educational levels correctly identified the features of infections. Knowledge also helped in the understanding of the orders given on how to take the medication to include timing and frequency. Those who were unable to read had difficulties relating to drug intake and often this resulted to cases of under dose and overdose which could lead to fatal implications. Another reason for this could be as a result of miscommunication between the client and the physician giving the orders.

Appia *et al.*, (2003) showed that despite evident symptoms of an infection or disease, a good number of people did not bother to seek medication and therefore did nothing about it. Others self-medicated as the first option and then went to the facility as the second option or third option in the event that the symptoms did not subside. For those who went to the health facility, some went at the onset of symptoms, some a few days after and a majority went at later stages of the illness when there is marked damage to the systems secondary to the disease. It was noted that a number of people do not consider the symptoms serious enough to warrant medical attention therefore try to treat themselves first, for instance the acute symptoms were unlikely to seek care than chronic symptoms. A study on health seeking behaviour by Coyne *et al.*, (2006) further explains that care is sought later rather than earlier since disease and accidents were regarded like any other hardships and as always part of their life. Some of the major effects or complications associated with self-medication are;

Habituation

This happens mostly with the addictive medications such as valium which records show to be widely abused. One gets used to the doses they are taking and keep increasing the amount from time to time and then it ceases to be therapeutic and instead becomes a drug of abuse or analgesic such as morphine. The longer the time it's taken the larger the dose is needed and this is due to increased biotransformation of the drug. (Karch, 2003).

Gastritis

Analgesics can induce gastritis and can also increase risk of stroke by four times in patients with high blood pressure; this is mostly caused by prolonged use of painkillers containing aspirin (Lalitha, 2013).

Organ Failure

Some medications if taken for a long time could lead to the destruction of some systems of the body leading to their failure, and irreversible damage. An example is the long-term use of the painkiller paracetamol which results in kidney failure a chronic condition which requires periodic sessions of dialysis or a transplant which turns out to be extremely expensive in the long run (Bourne, 2010).

Resistance

This happens when a drug is incorrectly used and it fails to deliver the desired therapeutic effect. It has been reported in most studies with antibiotics being the most abused medication. With time one develops resistance to the drug due to incompleteness of the doses or other reasons like long use of the drug incorrectly (Shankar *et al.*, 2002).

Microorganisms may develop resistance in a number of ways so that a drug does not deliver its effect properly, for instance through mutation, production of enzymes that deactivates the drug, by altering permeability of the membrane so the drug does not penetrate or by producing a chemical that acts as an antagonist to the drug (Karch, 2003).

Allergic Reactions

Allergic reaction is mostly in use of some antibiotics such as penicillin or sulpha drugs that can cause severe reactions in the body for some people. These could be fatal (Lalitha, 2013).

Drug-Drug Interaction

This refers to chemical reaction between two or more drugs in the body to produce unanticipated effects in the body i.e. may be an increase or a decrease in the desired effect of one or all drugs or an increase in the adverse effect. Some

people are usually on other medications as they go to purchase other drugs. For instance, some are on anti-hypertensive agents and these if taken together with some other drugs like anti-allergy drug could alter the former's desired effect which could warrant hospitalization. This is as a result of lack of knowledge most of the time (Karch, 2003).

The study therefore, sought to fill exiting knowledge gaps in the study area. Past studies on knowledge of self-medication were done in different geographical regions and differently (Kazeem *et al.*, 2009). Therefore, the researcher found it necessary to conduct this study. The objective of the study was to determine the knowledge of the effects of self-medication by the community in Nandi county.

Methods

The study was conducted in Nandi county and ethics approval was obtained from Masinde Muliro University of Science and Technology ethics board. No further approval was needed since the project did not require access to patients or personal data.

Research Design

The study designs adopted for this study was descriptive cross-sectional because they employ quantitative approaches, where self-administered questionnaires were used for data collection. This particular design was ideal since the research entailed collecting and comparing data from the phenomena at the same time of study (Basavanhappa, 2011). A descriptive research design determines and reports the way things are (Mugenda & Mugenda, 2008). Polit & Hungler (2010) observed that a descriptive research design was used when data was collected to describe persons, organizations, settings or phenomena. The purpose of the design was to gather data at a particular point in time with the intention of describing the nature of the existing conditions (Burns and Grove, 2011). Descriptive study design was also ideal as the study was carried out in a limited geographical scope and hence it was logically easier and simpler to conduct considering the limitations of this study (Mugenda& Mugenda, 2008). Therefore, the descriptive survey was deemed the best strategy to fulfill the objectives of this study.

Study setting

The study was hospital based. Mosoriot Sub-County hospital is a Tier 3 hospital according to the Ministry of Health Kenya grading. The hospital has a bed capacity of 20 and it provides both out patient, maternity and inpatient services. It is located along Eldoret –Kapsabet high- way within an upcoming centre due to establishment of two new colleges Kenya Medical Training centre and a university which may lead to increase in population and therefore congestion in the health facility. Therefore, people may see an opportunity of opening new chemists and private clinics which is one source of self-medication yet those employed in these chemists may not be qualified. Chesumei Sub- County where MSH is located has an area of 472.10 Km² and it serves Kosirai, Lelmokwo/Ngechek and parts of Ward Kapitel/Kamoiywo Wards with a population of 65,095.

Participants

Mugenda and Mugenda (2008) defined population as all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study. The study population were patients who are above eighteen years of age attending outpatient department at Mosoriot Sub-County Hospital and met the criteria of interest to the researcher (Burns & Grove, 2011). The researcher then randomly sampled the units of the study from the accessible population (Polit & Hungler, 2010). The research used a sample size of 248. Sample size was calculated according to the Fishers formula below (Fisher *et al.*, 1998). The sample size calculation yielded a sample of 248. Purposive sampling technique was used to select the study area because the prevalence of self-medication is not known also, Mosoriot sub-hospital has no special clinics and all patients are seen in outpatient. It gathers for the population of parts of Chesumei Sub-County, which are 65095.

A stratified sampling was used with the strata being the sex of patients attending outpatient department i.e. male or female. Proportionate sampling method was used in order to get the number of respondents from both sexes. The average number of females per month is 902, while that of male is 654. In total, they are 1556 therefore their proportions were 58% and 42% respectively, hence 144 females and 104 males were selected for the study. Systematic sampling method was used to reach each respondent. Clients sit on first come, first served basis therefore to get the first respondent, the first five clients to arrive, were sampled randomly by writing pieces of paper, one yes and four no's, then they were asked to pick each a piece. The one who picked a yes was the first respondent. The

rest were selected systematically using the sampling interval of five for both male and female patients.

Questionnaire

Questionnaires were selected as data collection instruments. A questionnaire is a printed self-report from designed to elicit information that can be obtained through the written responses of subjects. The information obtained through a questionnaire is similar to that obtained by an interview, but questions to have less depth (Denzin, 1970). The instrument comprised of the following sections: In section one, the information that was collected was the demographic characteristics and included age, gender, marital status, education level, occupation and religion. In section two, seven questions sought to determine self medication knowledge. The questions were ranked on a 2-point scale with the anchors being No=0 to yes=1. To increase the validity and reliability of the instruments, the questionnaire was evaluated by experts. Then based on the feedback the final questionnaire was prepared for pre-test. The pretest study was conducted in Kapsabet County Referral hospital. The reliability of the scale of the 7 items was found to be: Internal consistency = (Cronbach's $\alpha = 0.83$). Deleting selected items would not increase the alpha.

Data Analysis

Data analysis was done using the statistical program for social sciences (SPSS) version 25. Inferential and descriptive statistics were used to analyze data. Descriptive analysis of data was done using the mean, frequencies and percentages. In this study association between the study variables was assessed by a two-tailed probability value of $p < 0.05$ for significance. In order to examine the pattern of missing data, the researcher evaluated whether the data was missing completely at random (MCAR). The researcher utilized Little's MCAR test (Schlomer *et al.*, 2010) which employs a chi-square statistical analysis and assumes the null hypothesis, that missing data is missing completely due to randomness. In this case, failing to reject the null hypothesis indicates that the data was most likely not missing in a random way. For this study, Little's MCAR test results showed that Knowledge ($\chi^2 [242] = 96.447, p = .695$) was not significant indicating that the variables were missing completely at random, the researcher proceeded to address the missing data. To avoid reducing the variances of the scores by replacing missing items using subscale means, the missing data items were instead imputed using the Expectation-Maximization (EM) algorithm within SPSS 23; EM is considered a superior method for conducting missing data imputation when one has MCAR data (Schlomer *et al.*, 2010). Their guidelines were considered when reviewing the missing data for the current research study. Each question was coded and entered in SPSS. The findings were entered in the variable view of the Statistical Package for Social Sciences (SPSS) version 25.0 screen, each question at a time, starting with first to last questionnaire. The researcher conducted analyses of normality, for the outcome variable, prior to hypothesis testing by examining kurtosis and skewness of the data. In order to test and identify possible outliers in the data, graphical assessment visuals, including scatter and box plots were used. Elimination of observed outliers was based on a case by case basis, dependent on standard deviations, and on normality and homogeneity of variance assessments. Normality was assessed using examination of the histograms by seeing how they related or deviate against a normal bell curve distribution and observing the levels of kurtosis and skewness present.

Univariate analysis was used to describe the distribution of each of the variables in the study objective, appropriate descriptive analysis was used to generate frequency distributions, tables and other illustrations used to analyze knowledge of self-medication. Bivariate analysis was used to investigate the strength of the association and check differences between the outcome variable and other independent variables. One-way analysis of variance (ANOVA) at 0.05 level of significance was used to determine if there is differences in Knowledge among levels of the demographic characteristics. The knowledge questions were to be indexed for each respondent and an index score was to be computed and was recorded on a new variable.

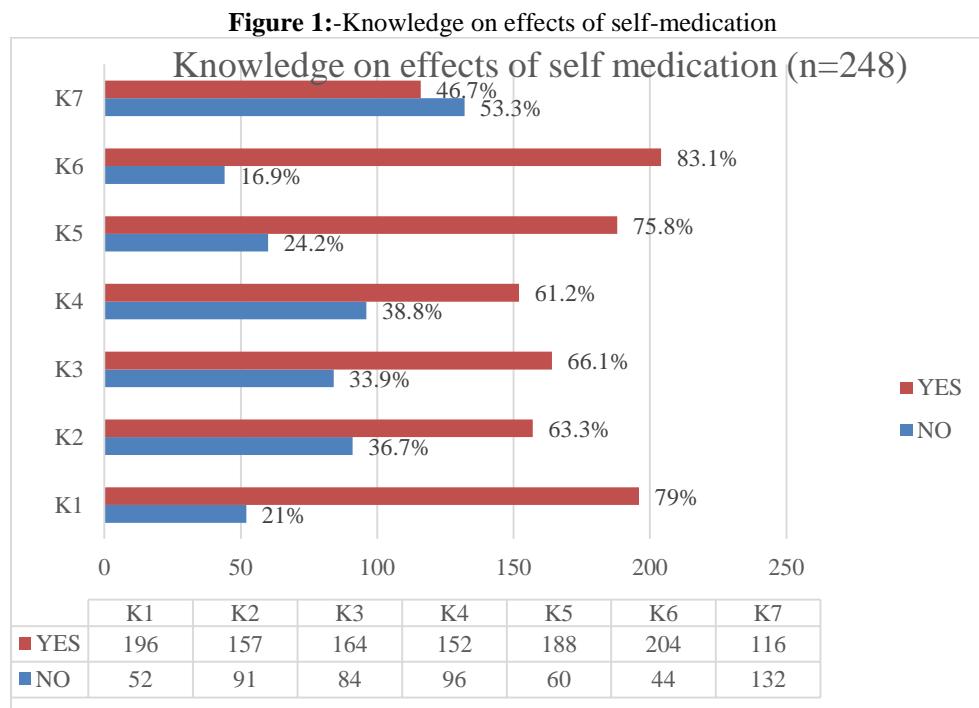
Results:-

248 questionnaires were correctly filled and returned which represented a response rate of one hundred percent. According to Mugenda and Mugenda (2003) a response rate of 50 percent is adequate, a response rate of 60 percent is good, and a response rate of 70 percent is very good. While we should not expect full response in studies where responding is voluntary, scholars utilizing questionnaires should aim for a high response rate (Baruch & Holtom, 2008). Firstly, the study asked the respondents to indicate their background characteristics based on the gender, religion, marital status; age-bracket and education level. The summary of their responses is given in Table 1.

Table 1:-Background characteristics of respondents

Demographics		Frequency	Percent
Gender	Male	104	43.1%
	Female	144	56.9%
	Total	248	100.0
Religion	Christian	240	96.8%
	Muslim	8	3.2%
	Total	248	100.0
Marital Status	Single	25	10.1%
	Married	205	82.7%
	Separated	6	2.4%
	Widowed	12	4.8%
	Total	248	100.0
Education level	No education	7	2.8%
	Primary education	108	43.5%
	Secondary education	107	43.1%
	College	26	10.5%
	Total	248	100.0
Age Bracket	18-25 years	36	14.5%
	26-33 years	46	18.5%
	34-41 years	50	20.2%
	42-49 years	61	24.6%
	50-59 years	30	12.1%
	60 years & above	25	10.1%
	Total	248	100.0

Findings in Table 1 revealed that, of the two hundred and forty-eight (248) respondents interviewed, 144 (58) were female while 104 (42%) were males. Majority of the respondents 205 (82.5%) were married while 6(2.4%) were divorced/separated. 108 (43.5%) of the respondents were of primary level of education while 7 (2.8%) had never gone to school. Majority of the respondents 240 (96.8%) were Christians, and 8 (3.2%) were Muslims. Findings in Table 1 revealed that, 196(79%) of the respondent said they always used medicine without doctors' prescriptions, 157(63.3%) said they thought symptomatic manifestation was a good way to confirm illness. Of the 248 respondents, 164(66.1%) said they knew the effects of using drugs without prescription and 152(61.2%) said it was not safe to buy drugs without prescription. Figure 1 below summarizes the responses on the knowledge items.

**Key**

- K1-** I always use medicine without Doctor's prescription
- K2-** Symptomatic manifestation is a good way to confirm illness
- K3-** I know the effects of using drugs without prescription
- K4-** Its not safe to buy drugs over the counter
- K5-** I always use left over drugs in the house when sick
- K6-** I usually check for side effects before using non-doctor prescribed medication
- K7-** Organ damage and overdose are dangers of using unprescribed drugs

Respondents answered a total of seven closed ended questions. Scale scores were computed by adding responses to the seven questions. The score varied from 0 - 7 points and was classified into 2 levels using the mean score as the cut off threshold:

1. High Knowledge (Above the mean of 4.2).
2. Poor Knowledge (Below the mean of 4.2).

Table 2:-Knowledge on effects of self-medication

Sources	Frequency	%
Poor Knowledge	186	75%
Good Knowledge	62	25%
Total	248	100%

With regards to Knowledge on effects of self-medication 75% of the respondents scored less than the mean score of 4.2 in the knowledge items and were categorized as having poor knowledge on effects of self-medication.

Bivariate analysis of the relationship between Socio demographic characteristics and Knowledge on effects of self-medication

Results from table 3 show that the knowledge of mental illness among females was higher 52.7% compared to males 48.8% however chi square analysis showed that there was no statistically significant relationship between the knowledge on effects of self-medication and gender $\chi^2 (1, N=248) = 0.22, p>0.05$. Respondents in the age bracket 34-41 years had the highest knowledge (72.7%) on effects of self-medication. Results from the chi square showed that there was a statistically significant relationship between knowledge on effects of self-medication and age $\chi^2 (3, N=248) = 32.722, p<0.05$.

Multinomial logistic regression was done, and the results showed people in the age group 18-25 were 1.7 times more likely ($OR=1.17$, 95% C.I, 0.4-3.8) to belong to the ‘poor knowledge’ group than the ‘good knowledge’ group compared to respondents over 45 years. With regards to marital status, respondents who were separated from their spouses had the highest knowledge (66.7%) of mental illness, while majority of the single people had poor knowledge on effects of self-medication (55.6%). Results from chi square test showed that there was a statistically significant relationship between marital status and knowledge on effects of self-medication $X^2 (4, N=248) = 39.109$, $p<0.05$.

Logistic regression was done and respondents who were single were 0.4 times more likely ($OR=0.42$, 95% C.I, 0.06-2.84) to belong to the ‘poor knowledge’ group than the ‘good knowledge’ group compared to the widowed. Table 3 is a bivariate analysis of socio demographic characteristics and knowledge of mental illness.

Table 3:-Bivariate analysis of Socio demographic characteristics and Knowledge on effects of self-medication

	Poor Knowledge (60%>)	Good Knowledge (60%<)	O.R(95% C.I)	$\chi^2(p$ value)
Gender				0.882
Male	53 (51.2%)	51 (48.8%)	-	
Female	68 (47.3%)	76 (52.7%)	-	
Age Bracket				0.001
18-25years	17 (46.9%)	19 (53.1%)	1.171 (0.359-3.825)	
26-33 years	28 (61.3%)	18 (38.7%)	2.098 (0.636-6.920)	
34-41 years	14 (27.3%)	36 (72.7%)	0.110 (0.022-0.544)	
Over 45	58 (50%)	58 (50%)	*	
Religion				0.983
Catholic	117 (49.1%)	123 (50.9%)		
Muslims	4 (50%)	4 (50%)		
Marital Status				0.05
Single	14 (55.6%)	11 (44.4%)	0.419 (0.062-2.835)	
Married	89 (43.4%)	116 (56.6%)	0.209 (0.33-1.344)	
Separated	2 (33.3%)	4 (66.7%)	0.500 (0.05-4.957)	
Widowed	6 (50%)	6 (50%)	*	
Educational Level				0.069
Primary Education	4(54.7%)	3 (45.3%)		
Secondary Education	43 (40%)	65 (60%)		
College	46 (42.9%)	61 (50%)		

*Reference category

Discussion:-

The objective of the study was to find out knowledge on effects of self-medication by the community in Nandi county. The study revealed that 75% of the respondents had knowledge of effects of self-medication. In a study done in Islamabad by Muhammad (2013) the prevalence of self-medication was at 64%. The current study’s results are consistent but are slightly higher from previous findings though not statistically significant. The study finding shows that symptomatic diagnosis (63.3%) is used by the residents to identify the health problem, though there was no significant association between level of education and knowledge on effects of self-medication. This concurs with a study done by Kazeem *et al.*, (2009) on Self-medication for infants with colic in Lagos Nigeria, that showed majority of the people self-medicate without really knowing what they are treating. People identified diseases using wrong clinical signs and symptoms which were actually defining other diseases. The study also revealed that 75.8% of the respondents always used left over drugs without prescription. This was consistent with findings from a study by Askarian (2013) in Southern Iran where respondents got the drugs used for self-medication from leftovers (68%). However, this was contrary with a research done by Mrinmoy *et al.* (2014) in India which had 79.5% of respondents obtaining the drugs from chemists. The current study also revealed that majority (83.1%) of the respondents were checking the side effects of the drug before using the non-doctor prescribed medication. This finding is consistent with findings from a study done by Osemene and Lamikanra (2012) in Nigeria which had similar finding. In

addition, the current study also noted that 53.3% of the respondents didn't know that self-medication could result to organ damage and overdose. This finding is consistent with findings from a study by Saleem *et al.* (2011) in Perinthalmanna where respondents were aware about the effects of self-medication. The possible reason for inconsistency could be that many of the respondents (43.5%) in the current study had primary education as their highest level of education.

Conclusion & Recommendation:-

The study established that residents of Nandi County had little to no knowledge about effects of self-medication hence more should be done to increase awareness in the community through informal education, public awareness campaigns, and formal school intervention. The following recommendations were made based on the findings of the conclusions of the study.

1. Health education to increase awareness and understanding by the community about the effects of self-medication and the importance of good health seeking behavior.
2. The County government should ensure that there is adequate availability of drugs and other services in the health facilities.
3. Further research is recommended in the area of individual drugs such as analgesics and antibiotics that are used mostly by those self-medicating.

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