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# Antibiotic Use and Misuse Among Adults in Magwagwa Ward, Nyamira County in Kenya

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***Abstract:*** *Self-medication is a public health concern in many countries, especially developing countries. Self-medication is the intake of drugs without medical supervision. This has resulted in serious health implications. This study investigated the level of knowledge, attitude and practices of adults toward self-medication. The study was conducted in Magwagwa ward, the population involved adults aged 18-75 years old both male and female. 385 participants were randomly selected. The study was conducted in the months of October and November 2016. A structured questionnaire was administered to the respondents and data was collected, analyzed in SPSS vs 20. 198 (66%) were females and 102 (34%) were males. Knowledge on self-medication was poor as it was found that majority of 121 (40%) depend on physician for information on antibiotic use, when asked if self-medication can cause harmful effects, 51% remained neutral, and when asked if there is danger in using an old prescription and even someone`s prescription, 65% and 58% remained neutral, more than half of adults attitude 50% (152) was that self-medication can be reliable, the study revealed that 60% of the respondents practiced self-medication.*

***Keywords:*** *Antibiotics, antimalarial drugs, antimicrobial resistance, non-prescription, over-the-counter drugs, and Self-medication*

## I. Introduction

Self-medication has been defined to be the choice and usage of medications to treat diseases or illnesses which are recognized by yourself without a doctor/physician`s prescription (WHO, 1998). Better health is considered to be important by many people, thus self-medication has gradually increased. Self-medication is a non-formal activity that take place in people`s daily lives. According to Novignon et al (2011), self-medication is a worldwide problem with the highest prevalence in developing countries. Over the counter drugs (OTC) are improperly used and hugely, prescription only drugs are also used for self-medication. For example, in India was 71% (Balamurugani & Ganesh, 2011), 76% in Pakistan (Zafar, et. al 2008), 77.9 in Greece (Skliros, et. al, 2010). In Africa, Tanzania had 58.9% (Kagashe and Msela, 2012) and Nigeria had 99.4% (Arikpo and Eja, 2010). In Kenya, it was 53.5% in 2012 (Misati, 2012) but a study done by Kimoloi et al (2013) revealed a 74% self-medication with antimalarial drugs.

Among the most commonly sold medications in developing countries are antibiotics, anti-malaria drugs, analgesics, and cough syrups among others, thus predisposing many people to the risk of developing resistance (Omolase, et. al 2007; Arikpo & Eja, 2010; Afolabi, 2000). A study conducted in Kenya, revealed that antimalarial drugs, painkillers and antipyretics like asprin and paracetamol were commonly used and were stocked even in local village shops, cheaply available and sold to even children (Geissler et al 2000). Another study done by Kimoloi et al (2013) in Kenya revealed that self-medication with antimalarial drugs was commonly practiced. In their study, private pharmacies/chemists were the major source of antimalarial drugs, the study further revealed that these drugs are easily accessible from private pharmacies. Besides the risk of developing antimicrobial resistance, misuse and excessive use of these antibiotics can result in also adverse reactions, harmful effects, delay in seeking medical care which can complicate their conditions and unexpected economic burden on a country`s health system (Gyssens, 2001; Afolabi, 2012). According to Aforlabi (2012) lack of knowledge on the adverse effects of self-medication has contributed greatly to the practice of self-medication.

Beside lack of knowledge, studies done by Metlay et al (1998) and McManus et al (1997) describe other factors that promote careless use of medications The illegal sale of antibiotics without prescription, physicians treat current symptoms at the expense of possible long term resistance and negative effects, poor health policies on medical insurance in some countries and harsh economic factors. In Africa and other developing countries, there are also factors like high illiteracy level, lack of exposure and poor exposure to information has resulted in increased self-medication (Novignon et al 2011). There are also socio-demographic characteristics like gender, morbidity, stress, age and attitude (Awad et al . 2005; Luis et al 1989; WHO, 1998). A study conducted by Kimoloi et al (2013) in Kenya found that cost, time, easy accessibility are also contributing factors to self-medication.

Thus, if people had knowledge on self-medication, its effects, severity and implication they would not practice self-medication but will rather opt to seek hospital intervention for appropriate examination, disease diagnosis and timely treatment with the right medications (Balamurugani & Ganesh, 2011).The aim of this study was to investigate the level of knowledge, behavior, and attitude of adults (over 18 years old) living in Magwagwa ward concerning the use, awareness about adverse reactions due to self-medication.

## II. Methodology

**2.1 Study site:**

The study was conducted in Magwagwa ward, one of the 12 wards found at North Mugirango constituency in Nyamira County. It has a population of 23,355 [Kenya population and housing census, 2009, http://www.knbs.or.ke/census]. The ward serves as a local trading center. Healthcare is provided by public and private healthcare facilities namely Magwagwa Health center, Community dispensary.

**2.2 Study design:**

Community based cross-sectional design. A Community based cross-sectional design

**2.3 Sampling method:**

The study targeted the residents of Magwagwa ward in Nyamira County. This population involved adults aged 18-75 years old both male and female. A representative sample of 385 participants were randomly selected from the general public at different study sites (e.g. shopping centres, open air market, homes etc.).

**2.4 Study period:**

The study was conducted in the months of October and November 2016.

**2.5 Study tools:**

A structured questionnaire was first pretested in order to validate acceptability to the local respondents and if the tool would collect relevant data. Some of the questionnaires were translated into the local gusii language to facilitate data collection. This was done by individuals who were fluent in both languages.

**2.6 Data collection and analysis:**

With the help of research assistants, the questionnaires were administered to the respondents available in the market and shopping centres (mostly in the evenings) and homes (mid-day). The researchers moved from house to house and at the end of each day, the filled questionnaires were checked for totality and accurateness. Data was entered into excel for further analysis. Then, the data was coded and entered into SPSS version 20, for statistical analysis.

**2.7 Ethical issues:**

Prior to the recruitment of participants for the study, aims of the study were explained and they were assured of privacy and confidentiality. Participation was voluntary.

## III. Results

**3.1 Socio-Demographic Characteristics of the respondents**

**Table 1:** Socio-Demographic Characteristics of the respondents

| Characteristics | Categories of characteristics | Frequency | Percentage (%) |
|---|---|---|---|
| Age | 18-25 | 98 | 33 |
| | 26-35 | 121 | 40 |
| | 36-45 | 42 | 14 |
| | > 45 | 39 | 13 |
| Gender | Male | 102 | 34 |
| | Female | 198 | 66 |
| Marital status | Single | 64 | 21 |
| | Married | 224 | 75 |
| | Divorced | 8 | 3 |
| | Widowed | 4 | 1 |
| Educational level | Primary | 195 | 65 |
| | Secondary | 56 | 19 |
| | Tertiary | 29 | 10 |
| | No schooling | 20 | 6 |
| Occupation | Employed | 15 | 5 |
| | Unemployed | 26 | 9 |
| | Business man/woman | 76 | 25 |
| | Housewife | 45 | 15 |
| | Farmer | 128 | 43 |
| | Others | 10 | 3 |

Table 1 shows the socio-demographic characteristics of 300 respondents from Magwagwa Ward in Nyamira County who agreed to participate in the study with a mean age of 33.12 and standard deviation of 12.9. A total of 385 questionnaires were distributed for the adult respondents. 300 questionnaires were completed

(response rate of 78.02 %). Out of which 198 (66%) were females and 102 (34%) were males. Majority of the participants age ranged from 26-35 years were 40% (121), followed by 18-25 years were 33% (98), 36-45 years were 14% (42) and > 45 years were 13% (39). Out of the 300 participants, females were 66% (198) and males were 34% (102). 75% (224) of the participants were married, 21% (64) single, 03% (8) divorced and 01% (4) were widowed. 65% (195) attained primary level of education, 19% (56) secondary, 10% (29) tertiary and 06% (20) had no formal schooling. Majority of the participant`s occupation was farming 43% (128), followed by business men/women 25% (76), house wife 15% (45), unemployed 09% (26), employed 05% (15) and others 03% (10).

### 3.2 Knowledge of respondents regarding self-medication

**Table 2:** Knowledge of respondents regarding self-medication

| Knowledge on self-medication | Response | Frequency | Percentage |
|---|---|---|---|
| Source of information on antibiotic use | Physician | 121 | 40 |
| | Relative | 97 | 32 |
| | Mass media | 65 | 22 |
| | Other | 17 | 6 |
| Reason for antibiotic use | Bacterial infection | 29 | 10 |
| | Parasitic infection | 49 | 16 |
| | Viral infection | 31 | 10 |
| | Fever | 76 | 25 |
| | Stomach ache | 22 | 7 |
| | Headache | 23 | 8 |
| | Multiple answers | 76 | 25 |
| | Others | 11 | 4 |
| Self-medication is an alternative to hospital intervention | Yes | 78 | 26 |
| | No | 48 | 16 |
| | neutral | 174 | 58 |
| Self-medication can cause harmful effects | Yes | 60 | 20 |
| | No | 87 | 29 |
| | neutral | 153 | 51 |
| There is no danger in using old prescription | Yes | 66 | 22 |
| | No | 40 | 13 |
| | neutral | 194 | 65 |
| It's safe to use someone`s prescription for a similar condition | Yes | 91 | 30 |
| | No | 37 | 12 |
| | neutral | 172 | 58 |

As for knowledge about self-medication, it was found that majority of 121 (40%) depend on physician for information on antibiotic use, followed by 97 (32%) who depend on relatives, 65 (22%) depend on mass media. Majority of the respondents 76 (25%) said that they use antibiotics for multiple reasons. When asked if self-medication is an alternative to hospital intervention, majority 174 (153) remained neutral while few 48 (16%) said no. When asked if self-medication can cause harmful effects, 153 (51%) remained neutral. The same was noticed also when asked if it's safe to use someone`s prescription for a similar condition/illness whereby 172 (58%) remained neutral (Table 2)

### 3.3 Attitude of respondents towards self-medication

**Table 3:** Attitude of respondents towards self-medication

| Attitude towards self-medication | Response | Frequency | Percentage |
|---|---|---|---|
| Can be reliable | Agree | 152 | 50 |
| | Disagree | 92 | 31 |
| | Neutral | 56 | 19 |
| Can be practiced on all drugs | Agree | 97 | 32 |
| | Disagree | 101 | 34 |
| | Neutral | 102 | 34 |
| Can lead to resistance | Agree | 43 | 14 |
| | Disagree | 50 | 17 |
| | Neutral | 207 | 69 |
| Can complicate illness | Agree | 82 | 27 |
| | Disagree | 51 | 17 |
| | Neutral | 167 | 56 |

As regards the attitude of respondents towards of self-medication, it was found that most respondents 152 (50%) attitude is that self-medication can be relied on. 92 (31%) disagree and 56 (19%) remained neutral. When asked if self-medication can be practiced on all drugs, majority of the respondents disagreed 102 (34%) were neutral, 101 (34%) disagreed but only 97 (32%) agreed. The respondents were also asked if self-medication can lead to resistance and complicate illness. Majority of the respondents (69% and 56%) remained

neutral. Only 14% agreed that self-medication can lead to resistance, 27% agreed that self-medication can complicate illness. 17% of the respondents disagreed that self-medication can lead to resistance and can complicate illness (Table 3).

### 3.4 Practices of self-medication

As for personal practices of respondents on self-medication, it was found that 180 (60%) of them practiced self-medication. Majority of the respondents 134 (45%) used or depended on the medicine that remained from the pharmacy followed by 67 (22%) who sourced from what remained from previous illness and friends/relatives. Only 32 (11%) sourced from the local shops. When asked for the reasons for unprescribed medication, majority of 102 (34%) said it was because of an emergency illness, followed by 78 (26%) who stay near pharmacies. 117 (39%) of respondents have sometimes reused old drugs, 152 (50%) have sometimes reused old prescription. When the respondents were further asked if they had discontinued or increased the dose, majority of 201 (67%) always discontinued or increased the dose. Finally, it was noted that 127 (42%) of the respondents sometimes checked expiry dates before purchase (Table 4)

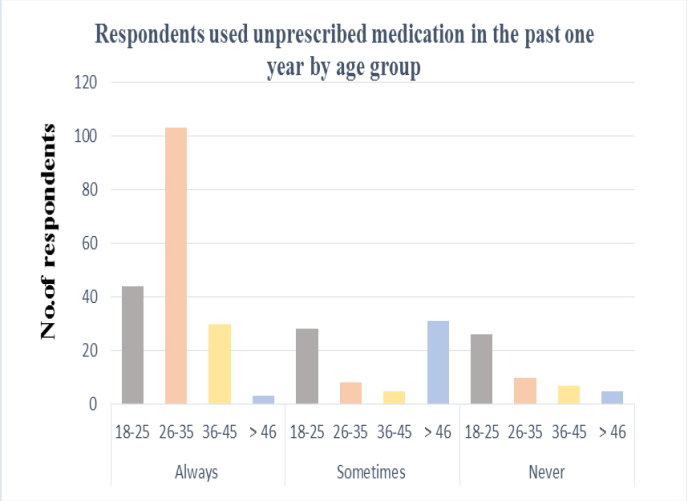
**Table 4:** Practices of self-medication

| Self-medication practice | Response | Frequency | Percentage |
|---|---|---|---|
| Used unprescribed medication in the past one year | Always | 180 | 60 |
| | Sometimes | 72 | 24 |
| | Never | 48 | 16 |
| Source of unprescribed medication | Remained from previous illness | 67 | 22 |
| | Pharmacy | 134 | 45 |
| | Shop | 32 | 11 |
| | Friend/relative | 67 | 22 |
| Reason for unprescribed medication | Emergency illness | 102 | 34 |
| | Near a pharmacy | 78 | 26 |
| | Distant health facility | 65 | 22 |
| | Other | 55 | 18 |
| Reuse of drugs | Always | 52 | 17 |
| | Sometimes | 117 | 39 |
| | Never | 131 | 44 |
| Reuse of old prescription | Always | 56 | 19 |
| | Sometimes | 152 | 50 |
| | Never | 92 | 31 |
| Discontinue/increase dose | Always | 201 | 67 |
| | Sometimes | 82 | 27 |
| | Never | 17 | 6 |
| Check expiry date before purchase | Always | 97 | 33 |
| | Sometimes | 127 | 42 |
| | Never | 76 | 25 |

### 3.5 Respondents used unprescribed medication in the past one year by age group

Self-medication was the major issue to be assessed in my study. Out of the 121 respondents in the 26-35 age group, 85% (103) always used unprescribed medication (Table 5).

**Table 5:** Respondents used unprescribed medication in the past one year by age group



## IV. Discussion

The study was aimed at investigating the level of knowledge, behavior, and attitude of adults (over 18 years old) living in Magwagwa ward concerning the use, awareness about adverse reactions due to self-medication.The findings in this study revealed that there was poor knowledge on self-medication. When asked the reasons for antibiotic use, majority (25%) gave multiple answers and an equal number (25%) use antibiotics to treat fever. In this study, it was clear that majority know not the difference between treating viral and bacterial infections and even other infections. Similar findings (McKee et al., 1999) and Shehadeh et al., (2012) reveal the same confusion among adults in other places.

In this study it was also worthy to report that majority of the respondents remained neutral to a number of questions. When asked if self-medication is an alternative to hospital intervention 58% remained neutral, when asked if self-medication can cause harmful effects, 51% remained neutral, and when asked if there is danger in using an old prescription and even someone`s prescription, 65% and 58% remained neutral. A neutral answer could imply that the respondents have no opinion about it, they have insufficient knowledge about it or they neither agree nor disagree. Nevertheless, it reveals a serious lack of knowledge.This findings agree with a study conducted in India Balamurugani & Ganesh (2011), and in Jordan (Shehadeh et al., 2012) which found that there was a serious lack of knowledge.Regarding the attitude, more than half adult`s attitude 50% (152) believe that self-medication can be reliable. This has serious implications, because inadequate information, or even erroneous information and misplaced self-confidence may lead to serious public health risks to the general public. Findings of my study agree with a study in Tanzania by (Monjeza et al.,2013).These findings differ with studies elsewhere in which the respondents have a negative attitude towards self-medication. This negative attitude is in harmony with studies in Egypt by (Ezz, 2011) and in Japan by (Aoyama et al., 2012). Studies by Mansour (2015) revealed that more than half of the respondents (60%) were neutral. This negative attitude is revealed amid high prevalence of self-medication. Respondents may be aware that self-medication is not acceptable. The practice could be due to other factors like emergency illness and nearness to pharmacies. However, it was noted that majority were neutral and an equal number disagree on practicing self-medication on all drugs. Majority of 69% remained neutral when asked if self-medication can lead to resistance. When asked if self-medication can complicate illness, majority 56% still remained neutral. It would be encouraging to do further investigations whether an increase in medication knowledge affects attitude and the practice of self-medication among adults.

The results from this study show that there is relatively high prevalence of self-medication among the adults. The study revealed that 60% of the respondents practiced self-medication. These findings are similar with other studies conducted in Kenya by (Kimoloi et al., 2013) which revealed a prevalence of 74% use of antimalarial drugs, (Misati, 2012) with a prevalence of 53.4%. Similar findings done elsewhere in Africa in Nigeria by Arikpo and Eja, (2011) revealed a prevalence of 99.4%, in Malawi (Novignon et. al. 2011) a prevalence of 56%. The variation in the above findings can be attributed to characteristics of the study population, sample size, period of study or the nature of study. But all the findings show a remarkably high prevalence of self-medication. The high prevalence of self-medication in my study highlight the need for public awareness on the adverse effects of self-medication and the need to seek early medical interventions.The study revealed varied reasons as to why respondents used unprescribed medication. Majority of them 102 (34%) cited emergency illness as the main reason for using unprescribed medication. This findings agree with findings in studies conducted in Kenya (Kimoloi et al., 2013) and in Tanzania by Kagashe & Msela, (2012).

The major source of unprescribed medicine was found to be the pharmacy 134 (45%). These findings are lower compared to findings by (Kimoloi et al., 2013) in Kenya that revealed a 78.4% compared to my study of 45%. Other sources of unprescribed drugs were what remained from previous illness, from friends/relatives and the shops. These findings are similar to those reported locally in Kenya (Deressa, et al. 2003; Buabeng, et al. 2007; Aborah, et al. 2013). Sourcing medications from what remained in previous illness, friends/relatives and local shops is alarming because these sources indicate possible overdose, under dose, poor adherence to recommended prescription. Under dose and overdose coupled with non-adherence can result in fast emergence of resistant microorganisms difficult to treat as reported in many parts of the world (Phyo et al., 2012)).

It was also noted with concern that respondents in the age group of 26-35 years, 85% (103/121) always used unprescribed medicine. This being the most active age group, serious education campaigns should be promoted against self-prescription. However studies done in Jordan (Shehadeh et al., 2012) revealed that the age gap of 18-25 years, 49.8 used left over antibiotics over the past one year.

The study had its limitations. The pattern of drug use may vary according to nature of illness, the study focused on a single ward in a constituency with 5 wards, so the study may not apply to the whole constituency or the entire County. Future studies should be aimed at obtaining samples from most wards of the constituency and from the whole county to make the results more generalizable.

## V. Conclusion

Findings from this study revealed a high prevalence of self-medication among adults in Magwagwa ward. Thus, 26-35 age group always self-medicate. Generally, there is poor knowledge about self-medication practice and its harmful effects. It was worthy to note that pharmacies are the main source of unprescribed medication, this promotes self-medication. Half of the respondents have the attitude that self-medication can be reliable. Therefore, from the study, there should be strict enforcement of over the counter sale of medications. Especially antibiotics, a further study with a larger population should be conducted in local communities, Pharmacies should be frequently supervised and appropriate measures taken to curb the existing menace.

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