

Perceptions Influencing Self Medication with Antibiotics and/or Antimalarials among the Households in Nyalenda B Sub-Location, Kisumu County, Kenya

Owour I. A. *, Prof Alwar J., Oyugi H.

Tropical Institute of Community Health, Great Lakes University of Kisumu

*Corresponding author: isabelowuor@yahoo.com

Received February 15, 2015; Revised May 11, 2015; Accepted May 31, 2015

Abstract Objectives: This study was designed to investigate the level of self medication with antibiotics and/or antimalarials and perceptions influencing the practice among the households in Nyalenda B Sub Location. **Methods:** This is a cross sectional study carried out on 350 systematically sampled household heads after clustering the households into five clusters of 70 households in November 2012. Quantitative primary data was obtained through the administration of pretested structured questionnaires comprising of likert scales, multiple and closed ended questions on the perceptions of consumption of self medication as a good and a service and questions establishing the demographics of the consumers. **Results:** The proportion of self medication with antibiotics and/or antimalarials is 76.9% (95% CI: 3.01-3.17) and the households perceptions influencing the practice are availability of information through advertisement (OR: 2.065, 95%CI: 1.218-3.502, p-value 0.007) of antibiotics and/or antimalarials and advice given by medical practitioners (OR: 0.467, 95%CI: 0.272-0.800, p-value 0.006), distance from the health facility (OR: 2.743, 95% CI: 1.042-5.009, p-value: 0.001), inadequately equipped local health facilities (OR: 1.948, 95% CI: 1.042-3.642, p-value: 0.037), sexually transmitted diseases (OR: 1.869, 95% C.I: 1.039-3.362, p-value, 0.037). **Conclusion:** Households perceive self medication with antibiotics and/or antimalarials as convenient and appropriate and this has an influence on the practice.

Keywords: self medication, antibiotics and/or antimalarials, Household's perceptions

Cite This Article: Owour I. A., Prof Alwar J., and Oyugi H., "Perceptions Influencing Self Medication with Antibiotics and/or Antimalarials among the Households in Nyalenda B Sub-Location, Kisumu County, Kenya." *American Journal of Public Health Research*, vol. 3, no. 3 (2015): 116-121. doi: 10.12691/ajphr-3-3-7.

1. Introduction

Self-medication is the obtaining and consumption of a drug without the advice of physician either for diagnosis, prescription or surveillance of the treatment or medication of oneself without the advice of a physician [2] or the use of medication by a patient on his own initiative or on the advice of a pharmacist or a lay person instead of consulting with a medical practitioner [3].

Self-medication with prescription only medicine can readily relieve acute medical problems, but most importantly, it can save the time spent in waiting to see a doctor, and even save life in a cute condition and may contribute to decreased healthcare cost [4]. The practice may associate with risks. From studies [5,6] it is reported that self-medication with prescription only medicine results in wasting of resources, increase in pathogens resistance and generally entails serious health hazards such as risk of drug interactions, adverse drug reactions, prolonged suffering and drug dependence [4,7,8,9].

Kenya bureau of statistics [10] states that the prevalence of self medication in Kenya is 58.2%, in Nyanza it is 68.5% and in Kisumu it is 64.8%. Legal

provisions exist in Kenya to govern dispensing practices of pharmaceutical personnel [11] and professional codes of conduct exist governing their professional behavior [12,13]. There is irrational dispensing of antibiotics at retail pharmacies and formal health care facilities with patient self medication and consumer demand for specific antibiotics (i.e. up to 1/3rd of the population uses retail pharmacies as their first point of care, with a large majority of clients demanding specific drugs). Over 94% of pharmacies interviewed in Nairobi indicated a willingness to negotiate antibiotic treatment protocols to meet the financial needs of clients. Laws and policies are in place to manage antibiotics, but government regulation is neither effective nor enforced [14].

The National major causes of outpatient morbidity are infectious diseases [15] and the physician patient ratio is one to 17,000 [16] as opposed to one to 1,000 which is WHO recommendation [17], this could have an effect on the patient perception on health care services and product.

The patient's perception of quality of care is critical to understanding the relationship between quality of care and utilization of health services and is now considered an outcome of healthcare delivery [18,19].

Perceived service delivery quality is the manner in which service is made accessible to consumers, it borders

on the attitude of service providers and “Service delivery seems to imply service encounters that entail more intense and deliberate use of emotions” [20].

Self medication service providers have realized that consumers are concerned with the process of how the service is delivered along with the outcome of the service [21].

Perceived service quality has been considered as one of the primary drivers of customer satisfaction [22,23].

Grönroos (1984) [24] define service quality as a perceived judgment, resulting from an evaluation process where customers compare their expectations with the service they perceive to have received. The author also suggests that service quality issues can be split into technical quality or service content (product) and functional quality or service delivery (how it is done).

Bateson and Hoffman (1999) [25] states, when a consumer purchases a service, he or she purchases an experience created by the delivery of that service. During the consumption experience, various types of emotions can be elicited, and these customer emotions convey important information about how the customer will ultimately assess the service encounter and subsequently, the overall service quality. If the customer is displaying positive emotions during the service encounter, it is expected that he or she will also form positive perceptions of the service.

The perception of service consumption are developed from these dimensions of service consumption experience and the factors influencing behaviour as reflected in the theory of reasoned action. They are perceived ease of use (convenience), perceived usefulness or appropriateness, perceived service quality, perceived value.

Perception of performance level affects customer's satisfaction directly or indirectly via disconfirmation [26,27,28,29]. Perceived service quality is described in terms of customer's assessment of the overall excellence or superiority of the service [30]. Parasuraman, Zeithaml and Berry (1985,1988) [31] consider that a customer's assessment of the overall service quality depends on the gap between expectations and the perceptions of actual performance level. The determinants of perceptions are presumably influenced by attributes of the service delivery process.

Despite the growing research interest in self medication, information on perceptions of self medication with antibiotics and/or antimalarials among households is lacking in developing countries especially in Nyalenda B Sub Location. This study investigated households' perceptions on procurement and on response (transformational experience) thus making a distinction between perception of self medication with antibiotics and/or antimalarials as a good and as a service in order to enhance effective provision and acquisition of antibiotics and/antimalarials.

2. Methodology.

2.1. Study Design

This is a cross sectional descriptive study that focused on primary quantitative data. Structured questionnaires of four likert scale, multiple choices and closed ended

questions were administered to sampled household heads in Nyalenda B Sub Location, Kisumu County. The respondents were selected by random and systematic sampling of all and any type of household

2.2. Study Area

The study was conducted in Nyalenda B Sub Location, Kisumu County. Nyalenda B stretches from Kachok junction on the Kisumu-Nairobi highway to Dunga and Nanga primary school, it lies between latitudes $0^{\circ} 6' 0''$ S and longitude $34^{\circ} 45' 0''$ E. and features five smaller units or villages (Kilo, Got Owak, Dunga, Nanga and Western). The area coverage is 4.7 sq. km and a population of approximately of 32,430, 16,189 male, 16241 female, 8561 households and a population density of 6,886 people per sq. km [32]. In Kisumu an estimated 60 percent of the population lives in informal settlements, with the majority living in abject poverty [33]. The choice of the study area was informed by the population density and the need to achieve the MDGs which will not be possible without efforts made to gather essential data identifying household perceptions on self medication as well as their urgent needs in such sectors as health. Self medication with antibiotics and/or antimalarials has been identified as a form of health seeking behaviour that results in wasting of resources and prolongs suffering [3,7,8,34].

2.3. Study Population

The study target population consisted of all households (8561 households [32]) in Nyalenda B Sub Location Kisumu County. The sample population consisted of 350 household drawn from this population.

2.4. Sampling Method

The study combined cluster sampling technique and systematic random sampling technique. The aerial cluster sampling method was used and it divided Nyalenda B into five clusters and to further to identify the respondents we used systematic random sampling method.

The sample size was 350 and this was divided among the 5 villages (clusters) in Nyalenda B Sub location, therefore each cluster had 70 households. The study decided on a sample interval of 7 by allocating 500 households to each cluster to allow for some uniformity in the level of spacing.

The first household was picked randomly by getting a central place in the village and numbering the households in vicinity, each number was then assigned a piece of paper and one of them unconsciously picked and became the first household interviewed. The next household was picked by jumping 7 households until a total of 70 households were reached in each village.

2.5. Determination of the Sample Size.

The sample size was calculated using the formula below

$$n = Z^2 p (1-p) / d^{235}$$

n=sample size

Z= Statistics corresponding to a chosen level of confidence

P=Expected prevalence

d= Precision

This formula was applied in a study done among university students in South West Nigeria [36] and among households in an urban slum community in Asia [37] to establish factors influencing self medication with prescription only medicine among the targeted population to calculate the sample size.

Using this formula the sample size is calculated at P =65% this is approximate prevalence of self medication in Kisumu District [10]

Z=1.96 at 95% confidence level

d=0.05

$n = Z^2 p (1-p) / d^2$

$$n = \frac{(1.96)(1.96) \times 65\% (1 - 65\%)}{(0.05)(0.05)}$$

$$n = \frac{(1.96)(1.96) \times 0.65(0.35)}{0.0025}$$

n= 350

This is supported by the Saunders Mark *et.al.*, (2003)³⁸ formula for calculating sample size

$$N = p\% \times q\% \times (z/e \%)^2$$

$$N = 0.65 \times 0.35 \times (1.96/0.05) (1.96/0.05).$$

Therefore N = 349.59.

Krejcie and Morgan (1970) [39] who worked out a sample size table. From the table if the population of study is 7000 or about and you need a sufficient number to generate a 95% confidence interval that predicts the characteristics of the population under study with a marginal error of + or - 5 % then the sample population will be 378.

This study used 350 as the sample size.

2.6. Study Instrument and Conduct

Studies on consumers perceptions has been carried out using questionnaires with standardized set questions in a 5 likert scale [40], 3 Likert scale [41], in depth interviews [42] and focused group discussions [43]. This study used a pretested structured questionnaires with standardized set questions in a 4 likert scale, multiple choices and closed ended questions that were responded to as the questions suggested.

This enabled objective assessment of the level and perceptions of self medication with antibiotics and/or antimalarials. The instrument also offered anonymity, further reducing social pressure and hence social desirability bias [44]. Likert scale allowed the individuals to make decisions on their level of agreement and so tapping into the cognitive and affective components of attitudes 45, each item had equal value therefore the scores were for the respondents and so giving quantitative data which is fast and easy to analyse. Logistic regression analysis to predict perceived factors that influence self medication with antibiotics and or antimalarials among households in Nyalenda B Sub Location, Kisumu County was done.

The structured questionnaire contained items assessing the prevalence and perceptions of self medication with antibiotics and or antimalarials among households in Nyalenda B Sub Location and was administered to the sampled households after taking informed consent. The head of each sampled household was the respondent, in the absence of the household head the interview was postponed to a later date. Help of Community health

volunteers was taken to establish rapport with the respondents. Questionnaires provide a high degree of data standardization and adoption of generalized information amongst any population. They are useful in a descriptive study where there is need to quickly and easily get information from people in anone threatening way⁴⁶. The questionnaires were self administered by the responded in the presence of an enumerator to aid the respondents in understanding the questions where necessary and to avoid unresponded to questions. The questionnaire was structured so as to get definite responses which the study required in a relatively short time and to cover a larger. The administration of study instrument took place from 27th-30th November, 2012.

2.7. Validity and Reliability

The research assistants went through one day training on objective data collection.

A pretest was done to ascertain the appropriateness of data collection instruments, identify any issue that could affect their administration besides correcting areas where ambiguity and weaknesses were identified and to confirm that the enumerators understood the instrument well. The pretest was conducted within Kilo Village and each of the enumerators administered the questionnaires to three households randomly picked. These very households were marked to prevent them from participating in the study.

2.8. Data Analysis and Presentation Techniques

Data was entered, analyzed and digitally stored with the assistance of Statistical Package for the Social Sciences (SPSS) version 17. The data was cleaned and analyzed using descriptive and inferential statistics. Results have been presented as proportions, along with 95% confidence interval (CIs) in form of tables.

Descriptive statistics was used to describe socio-demographic characteristics of the respondents, the level of self medication with antibiotics and/or antimalarials and perceptions of self medication with antibiotics and/or antimalarials.

Logistic regression were applied to estimate odds ratio, 95% confidence and p-values <0.05 for the significant association between households perceptions and self medication with antibiotics and/or antimalarials.

The predictor variables were households' perceptions on procurement of self medication with antibiotics and/or antimalarials factors which included perceived ease of use (convenient) perceived usefulness (Appropriate) and households' perception on responses (transformational experience) to self medication with antibiotics and/or antimalarials factors which included perceived treatment, drug resistance ,adverse effects of drugs , drug toxicity and non treatment. The criterion variable was the actual self medication with antibiotics and/or antimalarials.

3. Results

3.1. Respondent Demographic Characteristics

Majority of the respondents (42.9%) are of age 20-34 years, 58.9% were males, 56.0% were fathers, 45.7% were

Christian Protestants, and 88.6% had a net income of less than Ksh10,000 and 91.7% had attained primary education and above.

3.2. The Level of Self-medication with Antibiotics and/or Antimalarials

The proportion of the households of Nyalenda B households self medicating with antibiotics and/or antimalarials is 76.9%

3.3. Perceptions on Self Medication with Antibiotics and/or Antimalarials as a Good.

A) Perception on responses to selfmedication with antibiotics and/or antimalarials

Majority of the respondents reported were not fully recovered from their illnesses (45.7%) and cured of their illnesses (42.0%). A good number of households (51.2%) are misusing or overusing medications, 36.9% reported resistance or misdiagnosis and 46.6% underuse. Negative effects of drugs rise from mild adverse effect to drug toxicity. Most respondents have reported a known medicine that makes one sick when taken (47.1%) and having been taken to the hospital for drug effect (37.1%), this can be due to non-response to treatment, adverse effect or drug toxicity

B) Table 1

Table 1. Illnesses perceived manageable through self medication with antibiotics and/or antimalarials

Variables in Equation	% (n)	p-value	OR	95.0% CI for OR	
				lower	upper
Respiratory tract infection(1)	76.5% (176)	.614	1.170	.635	2.154
Gastrointestinal tract infection(1)	76.1% (172)	.947	.979	.522	1.838
Sexually transmitted infection(1)	69.7% (83)	.037	1.869	1.039	3.362
Eye disease(1)	75.6% (136)	.845	.941	.510	1.735
Headache/Fever(1)	77.0% (204)	.920	1.032	.558	1.908
Skin disease(1)	75.4% (144)	.865	1.053	.579	1.916
Maternal diseases(1)	73.9% (68)	.968	.987	.524	1.861

3.4. Perceptions on Self Medication as a Service

A) Table 2

Table 2. Reasons for self medication with antibiotics and/or antimalarials

Variables in Equation	%(n)	p-value	OR	95.0% CI for OR	
				lower	upper
Emergency use(1)	78.4%(181)	.605	.847	.450	1.592
Disease not serious (1)	82.4%(159)	.064	1.755	.968	3.184
Prevention of known or unknown disease (1)	68.9%(62)	.026	.506	.278	.921
Prior experience with the drug(1)	68.9%(62)	.659	.856	.429	1.707
Less expensive in terms of time or money(1)	77.1%(175)	.120	.611	.329	1.136
Proximity to the pharmacy(1)	73.5%(100)	.628	.850	.442	1.637
Health facility is far(1)	84.4%(179)	.001	2.743	1.502	5.009
Health facility not adequately equipped(1)	81.3%(122)	.037	1.948	1.042	3.642

B) Table 3

Table 3. Method of acquiring self medication

Variables in Equation	%(n)	P-value	OR	95.0% CI for OR	
				lower	upper
Mentioning the name of the drug(1)	73.1(117)	.139	.677	.404	1.134
Mentioning the group of the drug(1)	72.7(32)	.719	.863	.386	1.928
Mentioning the symptoms of illness(1)	76.8(183)	.665	.884	.507	1.543
Presenting an old sample or package(1)	85.0(34)	.146	2.121	.769	5.852
Presenting an old prescription(1)	62.2(46)	.001	.360	.200	.647
Describing the shape or color of the drug(1)	87.5 (14)	.414	1.909	.404	9.024

C) Table 4

Table 4. Perceived sources of self medication with antibiotics and/or antimalarials information

Variables in the Equation	%(n)	p-value	OR	95.0% C.I.for OR	
				lower	upper
Read label or promotional material (1)	81.8%(189)	.007	2.065	1.218	3.502
Advised by friends or relatives (1)	82.5%(52)	.415	1.366	.645	2.895
Advised by medical practitioners (1)	69.2%(119)	.006	.467	.272	.800
Recommended by pharmaceutical personnel (1)	78.1%(171)	.607	1.149	.678	1.946

D) Perceived efficient service provision

Most of the respondents very strongly perceive interaction with the service provider (52.6%) and service delivery (56.39%) positively.

4. Discussion.

4.1. The Level of Self Medication with Antibiotics and/or Antimalarials

The proportion of self medication with antibiotics and/or antimalarials in Nyalenda B Sub Location is above (76.9%) the reported ranges in the developing countries, in Africa it ranges from 24% to 73.9% in Africa [47], 36.1% to 45.8% in the Middle East 48.49.50. 29% in South America [51,52], 4% to 75% in Asia [53] A much lower self medication prevalence has been reported in developed countries with 3% in northern Europe, 6% in central Europe, and 19% in southern Europe [54], but it in Nyalenada B it is lower than Bangladesh where there is no prescription only medicine at present [52].

4.2. Perceived Factors that Influence Self Medication with Antibiotics and/or Antimalarials

One of the perceived factors that influence self medication with antibiotics and/or antimalarials is convenience, since the health facility is far (OR: 2.743, 95%CI: 1.042-5.009, p-value: 0.001) and the local health facilities are in adequately equipped (OR: 1.948, 95%CI: 1.042-3.642, p-value: 0.037) therefore self medication becomes accessible and efficient. A study done in Uyo, Nigeria revealed a higher magnitude (70%) among only illiterate pregnant women that were unable to access prescribed medicine due to distance from the health facility [55]. The other factor is appropriateness, since information on self medication with antibiotics and/or antimalarials is made available through advertisements (OR: 2.065, 95%CI: 1.218-3.502, p-value 0.007), this is also the case in Gujarat [56], advise is given by medical practitioners (OR: 0.467, 95%CI: 0.272-0.800, p-value 0.006) this is similar to Khartoum state Sudan [57] where source of information is either the pharmacist or the doctor (52%, 46%) respectively.

5. Conclusion

The use of self medication with antibiotics and/or antimalarials is high (76.9%). The households perceive self medication with antibiotics and/or antimalarials as convenient and appropriate. The predisposing factors are the perceived long distance from the preferred health facility, inadequately equipped local health facility, low income and time factor. The enabling factors being the perceived availability of information through advertisement of antibiotics and or antimalarials, advise from the pharmaceutical personnel, medication made available by mentioning the symptoms or the name of the medicine, illnesses perceived to be manageable at the pharmaceutical outlets, efficient self medication service delivery. Therefore households perceptions on self

medication with antibiotics and/or antimalarials has an influence on the practice.

6. Recommendations

In the view of the level, perceived benefits and risks of self medication with antibiotics and or antimalarials among the households in Nyalenda B Sub Location the Ministry of Health should develop a working party comprising of professionals that are likely to be most affected by the availability of antibiotics and antimalarials for self prescription. This Working party should produce a report on issues relevant to the possibility of switch from POM to P that would be informative to the licensing authorities, pharmacy practitioners, pharmaceutical industries, prescribers, and the public. The working party should avoid groups with vested interests and be composed of experts in drug regulation and specialists in areas of medicine. This will enhance flexibility when dealing with minor infectious illnesses, the general practitioners may gain from having fewer consultations for minor illnesses and have more time for cost effective treatments and the pharmaceutical practitioners would have further opportunities to use their professional knowledge and develop their range of services to the public

References

- [1] Montastruc JL, Bagheri H, Geraud T, Lapeyre-Mestre M. Pharmacovigilance of selfmedication. *Therapie* 1997; 52(2):105-10. ... *J Clin Pharm Ther* 1997; 22:261–72.
- [2] World Health Organization (2000): Guidelines for the regulatory assessment of Medicinal Products for use in self-medication. WHO/EDM/QSM/00.1.
- [3] Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self medication. *Drug Safety*. 2001; 24: 1027-1037.
- [4] Foster S. J. Treatment of malaria outside the formal health services *Trop Med Hyg*. 1995; 98(1):29-34.
- [5] Tayanithi P, Aramwit P. Self – medicated over the counter ophthalmic solutions in central Bangkok. *J-Med Assoc Thai*.2008; 88 (Suppl 4):S330-S334
- [6] Soparkar CN, Wilhelmus KR, Koch DD, Wallace GW, Jones DB. Acute andChronic conjunctivitis due to over the counter ophthalmic decongestants. *Arch Ophthalmol*. 1997; 115(1):34-38.
- [7] Kiyingi KS, LauwoJAK. Drugs in home: danger and waste. *World Health Forum*.1993; 14: 381-384.
- [8] Clavinjo, H.A., Self-medication during pregnancy. *World Health Forum*, 1995. 16: p. 403-404.
- [9] Gwee MC. Department of Pharmacology, Faculty of Medicine, National University of Singapore. *Annals of the Academy of Medicine, Singapore* 1993, 22(1):90-93.
- [10] Kenya Bureau of Statistics, 2005.
- [11] Pharmacy and Poisons Board, Kenya, 2010.
- [12] Pharmaceutical Society of Kenya, 2010.
- [13] Kenya Pharmaceutical Association, 2010.
- [14] Global Antibiotic Resistance Partnership (GARP) -Kenya Situation Analysis Status of Conditions Related to Antibiotic Resistance 2010.
- [15] World Health Organisation (WHO) (2010), "World Health Statistics 2010".
- [16] Kenyan-Population-and-Housing-Census-3rd January 2012.
- [17] Kinfu Y, Dal Poz MR, Mercer H, Evans DB. The health worker shortage in Africa: are enough physicians and nurses being trained? *Bull World Health Organ*. 2009 Mar; 87(3):225-30.
- [18] Ross, C., Steward, C. and Sinacore, J. "The importance of patient preferences in the measurement of health care satisfaction", *Medicine Care*, 1933; Vol. 31, pp. 1138-49.

- [19] Reerink IH, Sauerborn R. Quality of care in primary healthcare settings in developing countries: recent experiences and future directions. *International Journal of Quality of HealthCare*. 1996; 8: 131-9.
- [20] Luong, A. "Affective Service Display and Customer Mood," *Journal of Service Research*(8:2), 2005, pp.117-30.
- [21] Katz, J. *How Emotions Work*. Chicago, IL: University of Chicago Press, 1999. 163.
- [22] Kristensen, K., Martensen, A. and Gronholdt, L. "Measuring the impact of buying behaviour on customer satisfaction", *Total Quality Management*, 1999; Vol. 10, S602-S14.
- [23] Martensen, A., Gronholdt, L. and Kristensen, K. "The drivers of customer satisfaction and loyalty: cross-industry findings from Denmark", *Total Quality Management*, 2000; Vol. 11, pp. S544-53.
- [24] Gronroos, C. "A service quality model and its marketing implications", *European Journal of Marketing*, 1984; Vol. 18 No. 4, pp. 36-44.
- [25] Bateson, J. E. G., & Hoffman, K. D. (1999). *Managing services marketing* (4thed.). Chicago: The Dryden Press.
- [26] Cardozo, Richard, "An Experimental Study on Customers Effort, expectation and satisfaction", *Journal of Marketing Research*, 1965: 2 (3), 244-9.
- [27] Olshavsky and John A. Miller "Consumer Expectations, Product Performance and perceived Product Quality," *Journal of Marketing Research*, 1972; 9 (1) 19-21.
- [28] Olson, Jerry C and Philip Dover (1976), "Effects of Expectations Product Performance and Disconfirmation Belief Elements of Cognitive Structures," *Advances in Consumer Research* PROVO UT: Association for consumer research.
- [29] Oliver, Richard L (1980) "A Cognitive Model of Antecedents and Consequences of Satisfaction Decision," *Journal of Marketing Research*, 42 (4), 460-9.
- [30] Zeithaml, Valarie A. "Consumer Perception on Price, Quality and Value: A means-End Model and Synthesis of Evidence," *Journal of Marketing*, 1988; 52(3), 2-22.
- [31] Parasuraman A, Valarie A, Zeithaml and Leonard L. Berry, "Conceptual Model of Service Quality and its Implications for Future Research," *Journal of Marketing*, 1985; 49(4):41-50
- [32] Government of Kenya, Census 2009.
- [33] United Nations Human Settlements Programme [UN-HABITAT] (2008). *The Challenge of Slums: Global Report on Human Settlements*.
- [34] Gwee, M.C. Prevention of adverse drug reactions: role the patient (consumer). *Ann Acad Med Singapore*, 1993; 22(1): p. 90-93.
- [35] Fisher, Andrew A., John Laing, and John Stoeckel. 1985. "Guidelines for overcoming design problems in family planning operations research." *Studies in Family Planning* 16(2)
- [36] Sapkota AR, Coker ME, Goldstein RER, Atkinson NL, Sweet SJ, Sopeju PO., Self-medication with antibiotics for the treatment of menstrual symptoms in southwest Nigeria: across-sectional study, *BMC Public Health* 2010; 10: 1-10.
- [37] Pankaj Gupta, Prateek S. Bobhate, Saurabh R. Shrivastava. Determinants of Self Medication Practices in an urban Slum Community. *Asia Journal of Pharmaceutical and Clinical Research* 2011; 4 (3) 54-57.
- [38] Saunders M., Lewis P and Thornhill, A (2009). *Research Methods for Business Students*. 4th ed. Pearson Education Publishers. USA.
- [39] Krejcie, R.V., & Morgan, D.W. Determining Sample Size for Research Activities. *Educational and Psychological Measurement* 1970; 30, 607-610.
- [40] George N Lordorfos, Katch, Mulvana, John Temperley, 2006. "Consumer behaviour: Experience, Price, Trust and Subjective Norms in The OTC Pharmaceutical Market." Special edition on Consumer Satisfaction-Global Perspective.
- [41] Mulugeta T A, Nasir T W , Raju NJ. Assessment of Patterns of Drug use by World Health Organization's Prescribing, Patient Care and Health facility indicators in Selected Health Facilities in Southwest Ethiopia. *japs*. 2011; 01 (07):62-66.
- [42] ThiHoan Le, Ellinor Ottosson, Thi Kim Chuc Nguyen, BaoGiang Kim and Peter Allebeck Drug use and self-medication among children with respiratory illness or diarrhea in a rural district in Vietnam: a qualitative study. *J Multidiscip Healthc*. 2011; 4: 329-336.
- [43] Abdelmoneim Awad1, Idris Eltayeb2, Lloyd Matowe1 Lukman Thalib. Self-medication with Antibiotics and Antimalarials in the community of Khartoum State, Sudan *J Pharm PharmaceutSci* (www.cspscanada.org) 8(2): 326-331, 2005
- [44] McLeod, Saul. Likert Scale. *Simply Psychology* retrieved August 2008 26, 2011 from <http://www.simplypsychology.org/likert-scale.htm>.
- [45] Likert, R. "A technique for the measurement of attitudes". *Archives of Psychology*, 1932; Vol 22, No. 140, p 55.
- [46] Chandra H. and Chambers R. "Small area estimation under transformation to linearity", *Survey Methodology*. 2011; 37, 39-51.
- [47] Sapkota AR, Coker ME, Goldstein RER, Atkinson NL, Sweet SJ, Sopeju PO et al., Self-medication with antibiotics for the treatment of menstrual symptoms in southwest Nigeria: across-sectional study, *BMC Public Health* 2010; 10: 1-10.
- [48] Buke AC, Ermertcan S, Hosgor-Limoncu M, Ciceklioglu M, Eren S Rational antibiotic use and academic staff. *International Journal of Antimicrobial Agents*. 2003; 21: 63-66.
- [49] Buke C, Hosgor-Limoncu M, Ermertcan S, Ciceklioglu M, Tuncel M, Irrational use of antibiotics among university students. *J Infect*. 2005; 51: 135-139.
- [50] Al-Azzam SI, Al-Husein BA, Alzoubi F, Masadeh MM, Al-Horani MA. Self-medication with antibiotics in Jordanian population. *Int J Occup Med Environ Health* 2007; 20: 373-380.
- [51] Schorling JB, De Souza MA, Guerrant RL (1991) Patterns of antibiotic use among children in an urban Brazilian slum. *Int J Epidemiol* 20: 293
- [52] Kristiansson C, Reilly M, Gotuzzo E, Rodriguez H, Bartoloni A. Antibiotic use and health-seeking behaviour in an underprivileged area of Peru. *Trop Med Int Health*. 2008; 13: 434-441.
- [53] Morgan, R. M. and Hunt, S. D. "The Commitment-Trust Theory of Relationship Marketing," *Journal of Marketing*(58:1), 1994, pp. 20-38.
- [54] Islam N, Goldman JD, Kunin CM. Ask the expert. *APUA (Alliance for the Prudent Use of Antibiotics) Newsletter*. 1996; 14 (2):5. URL.
- [55] Festus Abasiubong, Emem Abasi Bassey, John Akpan Udobang, Oluyinka Samuel Akinbami, Sunday Bassey Udoh, Alphonsus Udoldung (2012). Self-Medication: potential risks and hazards among pregnant women in Uyo, Nigeria. *The Pan African Medical Journal*. 2012; 13:15.
- [56] Shah AP, Parmar SA, Kumkishan A, Mehta AA. Knowledge, Attitude and Practice (KAP) Survey Regarding the safe use of Medicines in rural area of Gujrat. *Adv Trop Med Pub Health*. 2011; 1(2): 66-70.
- [57] Abdelmoneim Awad, Idris Eltayeb, Lloyd Matowe, Lukman Thalib. Self-medication with Antibiotics and Antimalarials in the community of Khartoum State, Sudan *J Pharm PharmaceutSci* (www.cspscanada.org). 2005; 8(2):326-331, 2005.