Assessment of Artemisinin Based Combination Therapy Utilization among Patent Medicine Vendors in some Rural Areas in Nigeria

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Abstract

Introduction: Patent Medicine vendors (PMVs) can provide an opportunity for effective scaling up of artemsinin based combination therapy (ACT). However, there are serious concerns about their malaria treatment practices. Inadequate medicine sellers' knowledge will likely jeopardise the objective of this combination therapy. It is therefore relevant to assess the knowledge and utilization of ACTs by the PMVs in communities in Nigeria.

Objective: This study was conducted to evaluate the knowledge and utilization of artemisinin based combination therapy (ACT) by PMVs.

Methodology: The study was conducted among PMVs in six (6) communities in Anambra state, South-east Nigeria. A minimal sample size of 237 was determined using the formula for descriptive studies and 270 PMVs were used for the study. An interviewer administered questionnaire was used for the data collection and the data analysed using Statistical Program for Social Sciences (SPSS) version 18.

Results: Only 8 % of the respondents correctly mentioned the vector organism responsible for malaria transmission. However, while 78 % of the PMVs were conversant with the term ACT and 71 % stock ACT in their shops, only 13.3 % knew the Federal Ministry of Health (FMOH) recommended first line drug for treatment of uncomplicated malaria and also, only 23 % knew the distinction between mono- and combination therapies. Meanwhile, only 38.9 % of the interviewed group indicated paticipating in malaria trainings organised by different organisations in the past three years. Furthermore, 16.7 %, 20 % and 25.6 % respectively knew the dosage regimen, side effects and contra indications to a stated ACT.

Conclusion: This study concluded that there are inadequate knowledge and low utilization of ACTs in our study population and recommends educational programs on FMOH malaria treatment policy which may be effective in scaling up of ACT knowledge and utilization.

Key words: Drug utilization, Artemisinin combination therapy (ACT),Patent Medicine Vendors (PMV), Rural area, Antimalarias, Nigeria.

Introduction

The public health and economic challenges of malaria in Nigeria has been well documented in literatures.[1, 2] In an effort to stem the bleak situation, the Federal Ministry of Health (FMOH) in Nigeria changed the malaria treatment policy from chloroquine (CQ) and sulfadoxine/pyrimethamine (SP) to Artemisinin combination therapy (ACT),[2] with preference for Artemether/lumefantrine (ALU) and Artesunate/Amodiaquine (AS+AQ) combinations.[3] Meanwhile, the movement of malaria medications from prescription only medication (POM) to over the counter medication (OTC) and the dearth of standard health facilities in Sub Saharan Africa (SSA) has led to the growth of the Patent Medicine Vendors (PMV) as sources for malaria treatment[4] in most parts of Africa especially Nigeria. PMVs thrive because of the factors that have been enumerated in studies[5, 6]; consequently, policy makers have recognized that the PMVs can provide an opportunity for effective coverage of malaria treatment.[7] However, concerns abound on the appropriateness of care that PMVs provide.[8] It therefore becomes relevant to assess the knowledge and utilization of ACTs by the PMVs in communities in Nigeria. This study set out to evaluate the knowledge of the PMVs' on malaria especially on FMOH recommended first line drug for uncomplicated malaria. The outcome of this study will help design policy measures to strengthen the treatment component of the malaria control strategy.

Methods

Study Design and Study Sites

The study was conducted in some rural communities in Anambra state, south east Nigeria.

The study was a descriptive cross-sectional study. A minimal sample size of 237 PMVs was determined using the formula for descriptive studies[9] based on 19 % PMVs who stock ACT in Nigeria[10]. Purposive sampling method was used to select the study sites and 290 PMVs were selected for the study using random sampling method.

Data Collection Tool

The survey instrument was an interviewer-administered questionnaire. The questionnaire enquired on the socio demographic characteristics of the respondent, knowledge and perception about malaria, issue of side effects, dosing, precaution and adherence to ACTs.

Adherence is crucial to scaling up ACT. The likelihood that the PMVs will help promote adherence to the therapy was evaluated by noting the PMVs' understanding of the drugs' side effects and their ability to counsel their patients about the expected side effects.

The questionnaires were pretested among ten (10) PMVs in a different community not involved in the study and adjusted after the pretest. The study recruited four (4) research assistants (RA) in each community who were given an in-house training prior to the research. All the PMVs who consented to the study were informed that it was voluntary, strictly academic and that their responses will be treated with utmost confidentiality.

Data Analysis

The descriptive statistics of the variables were analysed using Statistical Program for Social Sciences (SPSS) version 18. Data presentation was in the form of pie charts.

Ethical Clearance

Ethical clearance was obtained from the Ethics committees of Anambra state University Teaching Hospital, Awka, Anambra State, Nigeria.

Results

The result showed that 48.9 % of the respondents were males while 51.1 % were females as shown in figure 1. Figure 2 shows that approximately 73.3 % of the respondents had secondary education, 14.4 % had tertiary education and 12.2 % had only primary education. Ninety-one percent (91 %) were engaged full time in the patent medicine business and the rest did it on part time basis as shown in figure 3. The age range of the PMVs as illustrated in figure 4 were 31-40 (36.7 %), 21-30 (28.9 %), 41-50 (23.3 %), 51-60 (5.6 %), >60 (3.3 %) and <21(2.2 %). The average years of experience of the interviewed PMVs was found to be 11 years. The study also showed that 86.7 % of respondents were store owners while 13.3% were sales clerk.

Only eight percent (8 %) of the PMVs interviewed correctly mentioned the vector organism implicated in malaria transmission and all the respondents (100 %) diagnosed malaria presumptively. However, 94 % mentioned correctly at least three symptoms of uncomplicated malaria and only about 13.3 % were aware of FMOH recommended malaria preventive measures. Within the last 3 years, 38.9 % of our respondents indicated participating in trainings on malaria control. Meanwhile, 15.6 % were trained by government agencies, 13.3 % by Non-governmental organizations (NGO's), 6.7 % by profit- oriented organizations and 1.1 % by both government agencies and NGO's. However, 36 of the respondents representing 13.3 % correctly

mentioned the FMOH recommended first-line drugs for uncomplicated malaria and 71 % knew signs of severe malaria where as 4 % knew the FMOH recommended measures pertaining to the condition. Approximately, 78 % of our respondents were conversant with the ACTs and 71 % of the PMVs stock ACTs in their shops. Data showed that while 20 % were knowledgeable on the generic names of the therapy, 23 % knew the distinction between the mono- and the combination therapies. Furthermore, 16.7 %, 20 %, and 25.6 % respectively mentioned the dosing, at least 3 side effects and 2 contra indications to a stated ACT.

Discussion

Understanding malaria, signs and symptoms of malaria, treatment options and most importantly, the current drugs recommended for malaria tratment is crucial to effective treatment of this disease. Drug resistance in plasmodium falciparium is a major threat to malaria control and poor knowledge of malaria and/or utilization of these drugs may help promote the development of this resistance strains. Recently, combination therapy including ACTs have been advocated to help improve efficacy and reduce resistance development. Hence, adequate information and understanding of the ACTs will help prevent losing this new agents to resistance and therefore, understanding the current knowledge and utilization of these ACTs by drug distributors particularly, the PMVs forms the basis of this study.

About 98 % of our respondents were above 21 years of age which is in line with the requirement of the pharmacy law in Nigeria, which requires that the PMVs' licensee should be at least 21 years of age[11]. Though, minimum educational requirement is not specified in Nigeria[12], we found that 73.3 % of the PMVs had post primary education. However, there has been call to raise the requirement to tertiary level.[13] A high number (91.1 %) of the respondents engaged full time in the patent medicine business. Studies [12, 14] have shown that whether a PMV is engaged full or part time in the business does not affect quality of health services rendered to patients. The PMVs have on the average 11 years of experience. This parameter may correlate positively with improved quality of health services.[15]

Treatment seeking behaviours relating to causation, transmission, prevention and treatment are the main socio-cultural factors that influence malaria control[16]. Incorrect beliefs or inappropriate behaviour can have strong implications on treatment outcomes and preventive measures[17]. We found that approximately only 8 % of our respondents mentioned bites from infested mosquito as a cause of malaria while 92 % mentioned other causes like exposure to rain waters, stagnant water, poor hygiene, ingesting contaminated food and water, high alcoholic intake and exposure to searing sun. Although these might seem inconceivable, the association between rain and mosquito and by extension malaria may have informed some of these thoughts[18]. Moreso, contaminated food, impure water, excess alcohol consumption and stress due to intense heat from the sun can compromise the immune status which may explain the reasons for some of the misconceptions. However, poor knowledge of aetiology of malaria has been documented in other studies.[17,18] These misconceptions are pointers that the PMVs' malaria control measures may be grossly inappropriate. Early treatment of childhood malaria is dependent among other factors on prompt recognition of symptoms.[16, 19] Our respondents demonstrated high knowledge (94.4 %) of at least 3 of the classical symptoms of uncomplicated malaria. On further investigation, we found

that most of our respondents recognised convulsion especially in children, jaundice and anaemia as signs that require referral. This may be an indication that our respondents may know the importance of prompt treatment.[21] On the issue of diagnosis, all the PMVs interviewed admitted treating malaria presumptively. Meanwhile, FMOH malaria treatment guideline[20] is specific on timely parasite –based diagnosis of malaria prior to treatment. Since shortcomings of presumptive diagnosis are well documented[21], this may imply failure of the PMVs to identify and treat malaria appropriately[22] and as such irrational use of antimalarials.[23]

It has been shown that FMOH malaria preventive measures are effective in reducing the prevalence of malaria.[24] One reason for demand for preventive health care is the increasing patronage of inappropriate health care providers.[25] Our findings showed that 13.3 % of the drug sellers could mention at least two FMOH recommended preventive strategies. A previous study [26] has reported a positive correlation between poor knowledge of preventive strategies and low practice. The low figure we reported could be attributed to inadequate training especially on the aetiology of malaria.[19, 27] Poor knowledge of malaria preventive measures similar to this study has also been reported in previous studies.[28, 29] Although, PMVs have been recognised as crucial in scaling up the malaria treatment policy pertaining to uncomplicated malaria, many of their practices have been reported to be inappropriate.[5] Training community level providers is a strategy for strengthening the therapy.[30] Our finding showed that 38.9% only of drug vendor received trainings on malaria management in the previous three years. Majority of the drug sellers were trained by government agencies (15.6 %) and NGOs (13.3 %). This finding is not encouraging since it is a pointer that malaria management at that level will likely be of minimal standard.[31] On the issue of malaria treatment, only 13.3 % of the respondents prescribed at least one correct FMOH recommended ACT. A dismal result comparable to this was reported in a study in north western Nigeria.[32] However, other studies cited [33, 34] reported high utilization of ACTs. The low number (13.3 %) as reported in this study is an indication of high treatment failures. It is probable that the presumptive diagnosis used in all cases may have also contributed to the dismal result.[35] Accessibility and utilization of appropriate health services is another factor that determines early treatment of childhood diseases[16, 19]. A high number (71 %) of our respondents were conversant with signs that require patient referral and only 4 % were aware of FMOH recommended treatment measures for severe malaria prior to referral. This result contrasts with those of Anberber *et al*[36] and Idro et al[37], where poor referral practice was documented.

A high number (78 %) of our respondents were conversant with the artemisinin combinations. It would be pertinent to note that awareness does not necessarily translate to true knowledge as many drug sellers could not identify ACTs' by generics. The high awareness figure we reported may probably be due to patient demand[38, 39]. Other studies have also documented high awareness levels of ACTs.[34,40] Similarly, a high number (71.1 %) of respondents stock ACTs in their shops. A study has shown that availability of ACT is a predictor of utilization[34]. However, utilization of ACTs in our study was only 13.3 %. This anomaly may probably be explained by a consideration of the consumer demands [38, 39] and advertisement by drug firms[41]. It has also been shown that side effects are predictors of adherence[42], and as such, poor knowledge of side effects may correlate positively to non adherence to the drug. This study showed that only 26.7 % of our medicine sellers could mention at least three side effects of a stated ACT and this percentage affirmed that they counsel the patients on side effects. We also noted that only 23 % could draw

a distinction between artemisinin deriviatives monotherapies and their combination therapies. This is disturbing since it is an indication that artemisinin monotherapy may be dispensed as combination therapy, as reported in a study in North West Nigeria.[43] This practice may likely predispose to treatment failure[3] and resistance development. A comparable result (24.4 %) to ours was reported among health providers in Enugu state, South east Nigeria.[34] Studies by Dodoo et al[35] and Adisa et al[33] meanwhile documented higher figures.

Patient knowledge of the ACT dosing regimen is the strongest predictor of adherence[44]. Increasing caregivers' and patients' understanding of the ACT dosage regimen could influence optimal outcome.[38, 45] Our findings showed that 68% of our drug sellers correctly mentioned the dosage regimen of a stated ACT. Other factors crucial in ensuring clinical efficacy and prevention of adverse events to ACTs include understanding of the contra indication(s) and precaution(s). Our study showed that only 26 % of the respondents knew at least two contra indications and precautions to a stated ACT. Low knowledge of this parameter will compromise the efficacy of the combination treatment and increase the incidence of severe adverse drug reaction.

Conclusion

The outcome of our study showed inadequate knowledge and low utilization of ACTs in our study population. We recommend education programs on FMOH malaria treatment policy to ensure that we do not lose ACTs to resistance.

Conflict of Interest: None declared.

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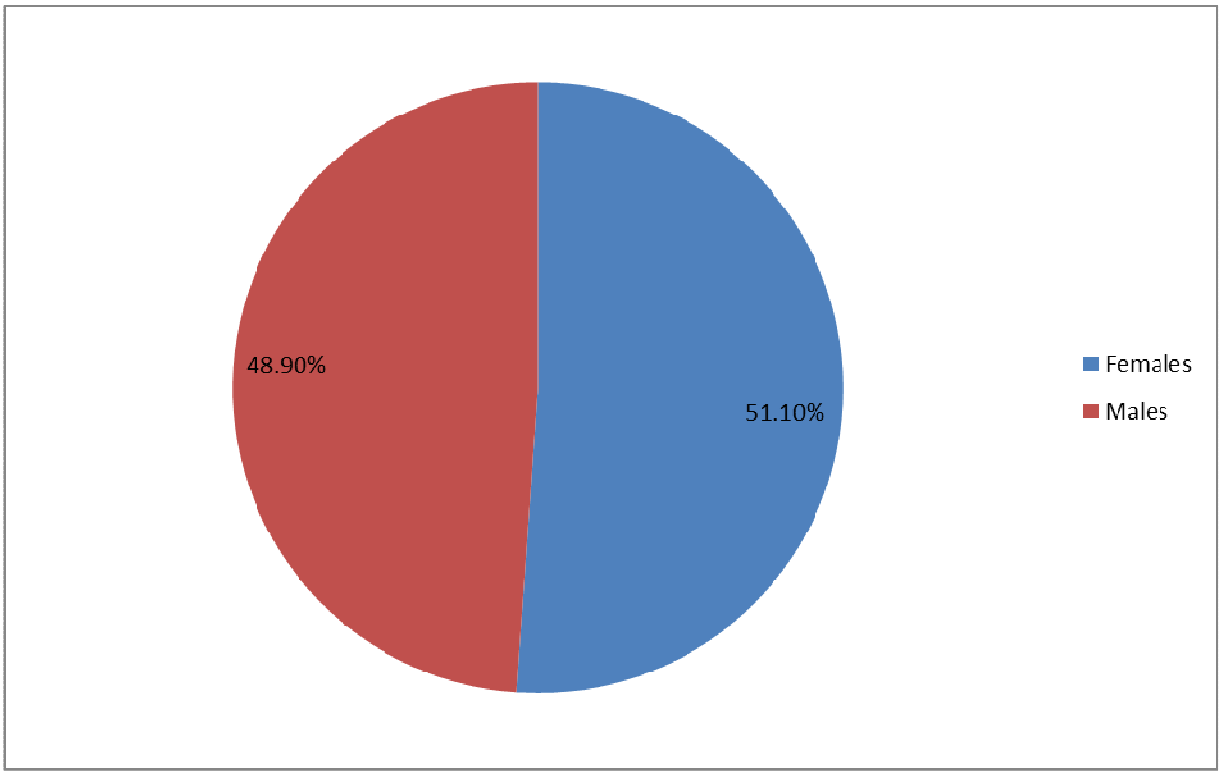

Figure 1: Gender distribution of respondents

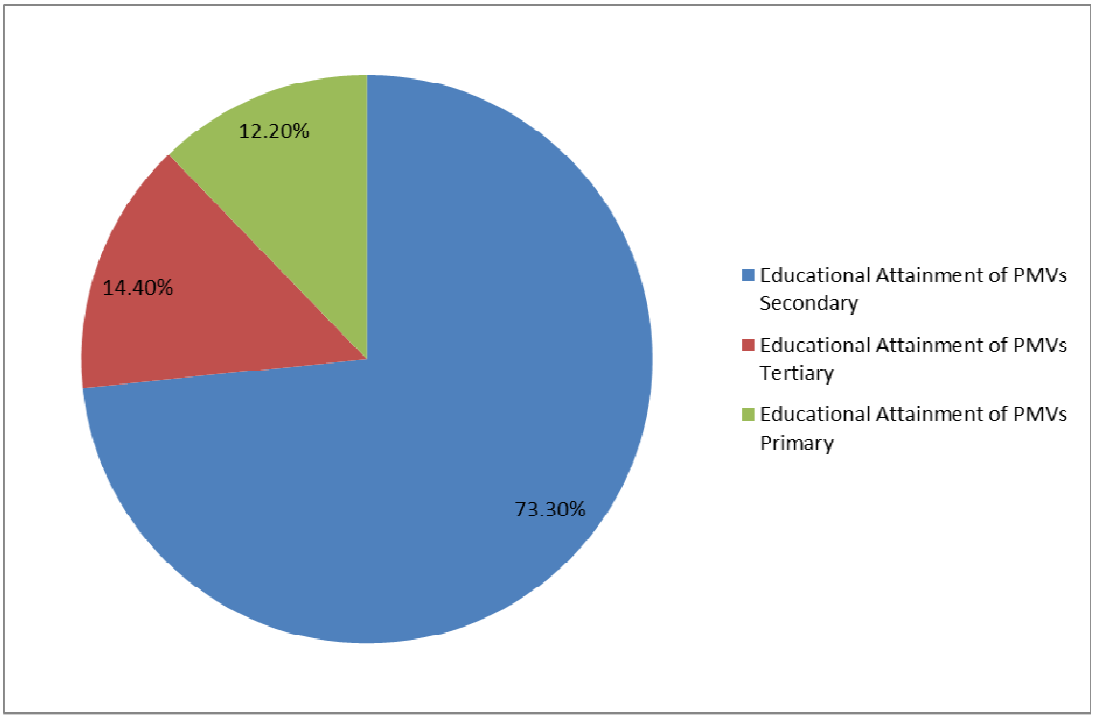

Figure 2: Educational attainment

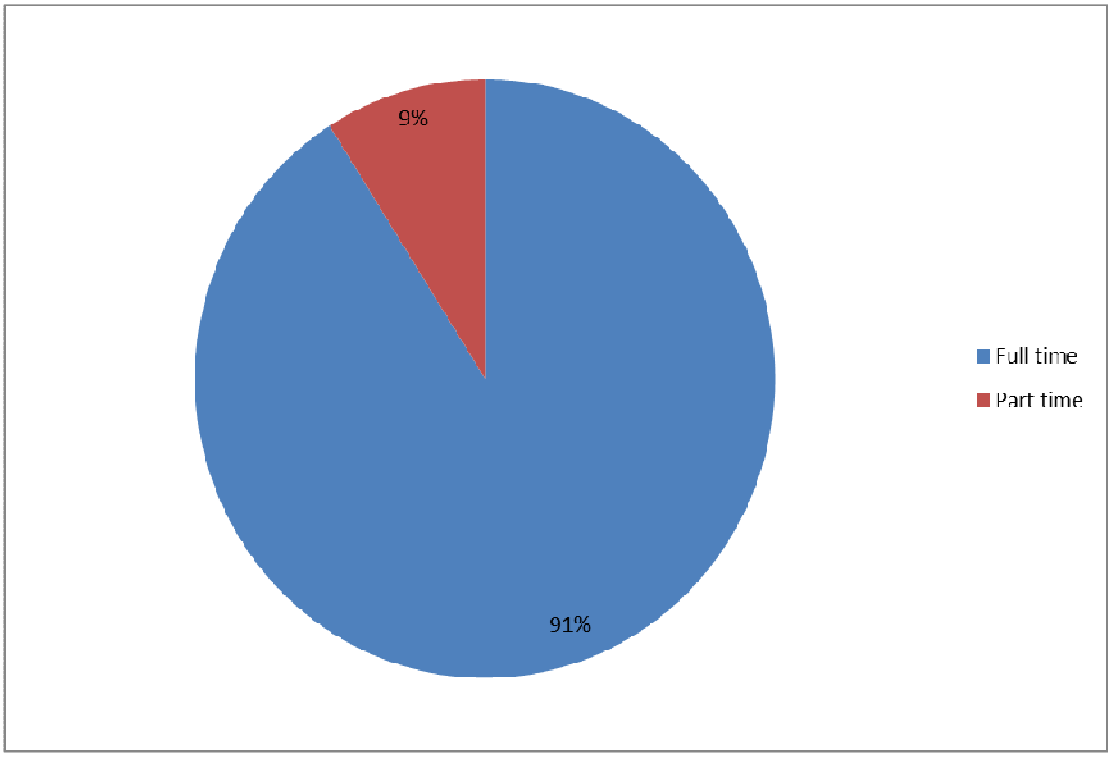

Figure 3: Time dedicated

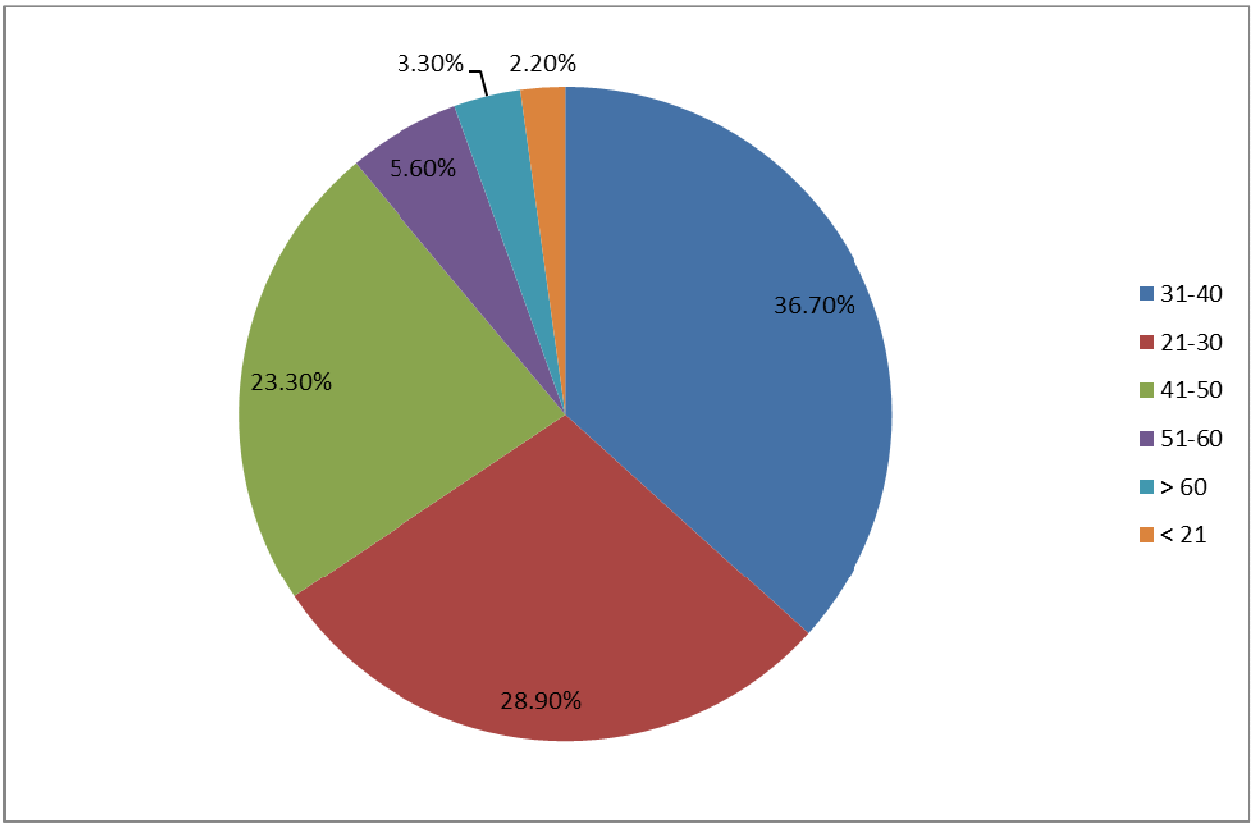

Figure 4: Age distribution of respondents