1.0 SOCIO-ECONOMIC DETERMINANTS OF COMMUNITY HEALTH FUND MEMBERSHIP IN KALAMBO DISTRICT, RUKWA REGION, TANZANIA

Alexander D. Kasonso[1*], Emanuel E. Chingonikaya[1], Anna N. Sikira[1]

[1]Department of Development Studies, College of Social Sciences and Humanities, Sokoine University of Agriculture,

Abstract

The study aims at determining the influence of factors affecting CHF membership. The paper analyses socio-economic determinants of Household HH's membership to CHF. Across-sectional research design was used in the study whereby data were collected using a household questionnaire survey, Focus Group Discussions (FGDs), Key Informants Interviews (KIIs) and documentary review. Quantitative data were analysed using descriptive statistics and inferential statistics whereby a binary logistic model was used. Qualitative data were analysed using content analysis. The sample size was 354 households, which were determined by Yemen's formula. The results of this study show that, in the eleven variables used in the binary logistic model, three were found to be significant predictors of CHF membership at ($p < 0.05$). These are awareness of existence of CHF, Ex-CHF membership and income. It is concluded that many households have not joined the fund due to lack of awareness on the existence of CHF and lack of income. Therefore, Local Government Authorities (LGAs) should initiate concerted educative measures to community members on the existence and importance of CHF to their health. Furthermore, LGAs should set a reasonable amount of money to be contributed by HHsin enrolling for the fund, basing on the district socio-economic profile.

Key words: Community Health Funds, CHF membership

1. INTRODUCTION

The Community Health Fund (CHF) is one of social security funds found in Tanzania. Social security is the protection provided to individuals and households to ensure access to healthcare and guarantee income security particularly in sickness cases, injury at work place, maternity, invalidity, or loss of a breadwinner (ILO, 2018). CHF as one of the health insurance schemes, is a voluntary community based financing whereby households owe paying contributions to finance part of their basic health care services to complement the government health care financing efforts (URT, 2001). Globally, there are sixteen countries that have promoted better healthcare systems by improving health services to its people (Martin, 2017). These include Luxembourg, Singapore, Switzerland, Netherlands, Sweden, Germany, Belgium, New Zealand, Norway, France (Europe), Hong Kong, Japan (Asia), Israel, Qatar (Middle East), Australia, and Canada (North America). Experience shows that European and North American countries have promoted health security to the extent that life expectancy of their people is relatively higher than is the case in the rest of the countries in the world. For example, inLos Angeles, USA, disparities in the structure of social economic resources vary and are remarkably perceivable (County of Los Angeles, 2013). Such disparities can mean differences between life and death or a life filled with vigour and good health as opposed to ill health. Education level, employment, earnings, family size and social backing and community security are all the components of socio-economic determinants of health security (Kamuzora *et al.,* 2007).

In Sub-Saharan Africa (SSA), socio-economic factors have been a barrier against membership to community health protection. Households desperately cling to savings, possessions, and procure loans or borrowing from family members and friends to cope with high out-of-pocket payments (Carapinha *et al.,* 2010). About 30percentof families in 15 SSA countries are financing their health care by borrowing or vending their assets. Out-of-pocket payments can lead to poverty as they only mean to wring out endlessly whatever household possesses whenever health service is needed. Such payments are in turn likely to impede HHsin joining health insurance schemes by exhausting their belongings that would otherwise facilitate the joining process. Rwanda was among the countries in SSA that were doing well in Community Health Insurance (CHI) since its introduction in 1999 as mentioned by WHO (2003). One of the reasons for good performance in Rwanda was people's awareness on community health insurance schemes. Accordingly, members are invited in scheme's general assembly to interact with the administrative scheme councils and discus needs, concerns, and suggest how to improve CHI. In Tanzania; the Government spearheaded the move by being a key player in the provision of health services from 1961 to 1991 under the socialist ideology (URT, 2008). Private health care facility suppliers were barred in 1977 under the Private Hospitals (Regulation) Act (URT, 1977). In the 1990s,the health sector embraced structural reforms that went hand in hand with improvement in the quality of health care services of which cost sharing in health services was introduced. CHF was introduced in 1996 and was piloted in Tabora Region, Igunga District in particular, and was later extended to other districts (Macha *et al.,* 2015). In Kalambo District Council, CHF was

introduced in 2012 after the founding of Kalambo District Council that was formally a part of Sumbawanga District Council.

Community Health Fund was established with the intention of being an alternative for user fees payments for people who work in the informal sectors of whom many are victimized by low earnings and are vulnerable to diseases (Mtei G and Mulligan J, 2007). Since its founding, it has not operated satisfactorily. Its coverage has remained very low, around 4.5percentof households are covered while the national target was 30percent of households to be covered from 2008 to 2015 (Ndomba *et al.,* 2019). The trend in population level of health insurance coverage in Tanzania has been changing year after year: it was 8.3percent in 2011/12, 7.3percent in 2012/13 andwas 7.3percent in 2013/14 (URT, 2015).

Community Health Fund is important in covering contingencies such as sickness and the like when a patient has no cash (Morestin, 2009), but the majority of households are not members of CHF in Tanzania. Thus, this paper aims at showing how socio-economic factors have played a decisive roleon CHF membership. There is a need for active membership, good management and good health facilities for effective operation of the fund (HPSS, 2018). Despite its importance as stressed in its Act, which is to enable members have access to reliable and effective health care by creating a sustainable financial mechanism (URT, 2001), few HHs have joined the fund. This requires a study to determine the factors influencing the CHF membership among HHs. Several studies that have been conducted show that not only registration trend was declining, but also the enrolled group kept narrowing as some fund members were withdrawing from the scheme (Msuya. *et al.,* 2004; and Marwa *et al.,* 2013).

Theoretically, the study adopted the Social Presence Theory (SPT) (Short *et al.,* 1976). The theory was found by Short, Williams, and Christie in 1976. This approach was used as groundwork for many theories on new medium effects. The core assumptions are that a medium's social effects are the results of the degree of social presence that it affords to its users. By this theory it means that a communicator's sense of awareness of the presence of an interaction partner is essential. This is important for the process by which man comes to know and think about other persons, their characteristics, qualities, and inner states in order to improve their relationship. Thus, increased presence leads to a better person perception hence achievements of the targeted goal. In relation to this study, the theory emphasizes on awareness and interaction between CHF and HH members. The idea is that CHF memberships principally caused by the degree of socio-economic factors which influence CHF users who, in this context, are HHs that are to be either fund beneficiaries or otherwise. This is important for improvement of the services because CHF as an organ is in a position to know its members, their concerns, their traits, which are socio-economic factors for this study, and internal matters, which are the roles of institutions in implementing CHF policies, which in turn monitor the performance of CHF to its members.

Conceptually, the outcome variables show the way socio-economic factors influence communities towards CHF membership. It shows also the role of institutions in influencing CHF policies in monitoring CHF activities that can result into CHF benefits on health services that influence CHF membership as well. Thus, socio-economic factors and the role of institutions in influencing CHF policies can trigger an individual's decision into joining or refraining from joining the scheme. Members can also decide to proceed with their membership or withdraw depending on how they benefit from the fund as membership is not something compulsory but rather voluntary.

Based on the provided trend, socio-economic factors such as age, sex, awareness on CHF, education level, income, assets, family size, access to finance and occupation are the indicators that could influence people into joining CHF as revealed in this paper. Therefore, the main objective of this study was to determine the socio-economic factors that influence CHF membership. The paper essentially focused on analysing socio-economic determinants of HH's membership to CHF. The questions that were answered by this paper are, do socio-economic factors influence HHs to join the CHF? What measures should be taken in recruiting fund members .Waheke (2015) reveals that socio-economic factors were major determinants of CHF membership in her study area. The situation has remained the same because CHF workers has remained reluctant on following the results and recommendations that brought by previous studies. This study will be useful in indicating the causes of poor performance of CHF, and the measures to be taken by CHF in order to increase its membership.

2.0 METHODOLOGY

The study was conducted in Kalambo District Council, which is one of three districts of Rukwa Region in Tanzania. The district was chosen basing on economic activities whereby the majority of its people are employed in the informal sector, which is the main target of CHF for its coverage (URT, 2004). The main economic activities are crop farming, livestock keeping, fishing, trading, and bee keeping. In addition, Kalambo District is one of those areas with few CHF members basing on HSSP III targets in Rukwa Region. Only 7.5percent of the population is covered, while in Singida Region 54.4percentare covered and in Mbeya Region 43percent are covered with the CHF (UTR, 2015).

The study used a cross-sectional research design (Creswell, 2014). This has a greater degree of accuracy in social science studies than other designs (Casley and Kumar, 1998). It employs a survey method, which can be used to establish the relationships between variables for the purposes of testing hypotheses. The design also allows minimal use of labour, time, and money because it is done in one time (Baltazari *et al.*, 2012). The sample size of HHs was determined using Yamane`s (1974) formula as cited by Israel (2013) which is:

$n = \frac{N}{1+N(e)^2}$ =3060/1+3060 $(0.05)^2$ = 354.

Where: n is the sample size, and N is the population. In this study, N is the estimated number of households in five selected villages. Since there were few CHF members, simple stratified sampling was used to select equal numbers of CHF members and non-members (Hansen *et al.*, 1953). The names of all household heads were obtained from village offices that showed CHF members and non-members. The sample size was divided equally basing on simple stratified sampling between CHF members and non-members by the following formula:

$$a = \frac{n}{N} \times b$$

Where: a, is the sample size for each village, n is the total number of sampled households for 5 villages, N is the target households for the 5 villages, and b is the target households in each village. A total sample size of 354 HHs was obtained (Table 1).

Table 1.0: Number of sampled households in each study village

Ward	Village	Total households (N)	Sampled households (n)	CHF members	CHF non-members
Msanzi	Msanzikati	599	599/3060*354 = 69	20	49
Matai	Singiwe	300	300/3060*354 = 35	8	27
Mkowe	Mbuza	564	564 /3060*354 = 65	11	54
Kisumba	Kasote	500	500/3060*354 = 58	14	44
Kasanga	Kasanga	1097	1097/3060*354 = 127	33	94
Total		**3060**	**354**	**86**	**268**

Both qualitative and quantitative data were used. A questionnaire survey was used to collect data from the respondents. The types of information that were targeted here were HHs demographic characteristics and socio-economic factors that determine CHF membership. In addition, Focus Group Discussions (FGDs) with small but variable numbers of discussants between 6 and 8 were conducted (Byers, 1996). Two FGDs were conducted per each village in order to collect qualitative data to complement the data collected through the questionnaire survey. The information captured in FGDs was about challenges leading to low membership, as well as strengths and weaknesses of CHF. Participants who were considered in FGDs were those who were working in informal sectors, which are the targeted group of CHF. Gender balance was another factor that was considered for FGDs whereby equal numbers of men and women were selected. Moreover, Key Informant Interviews (KIIs) were conducted specifically with those who were working with CHF such as the District Commissioner (DC), the District Medical Officer (DMO), Clinical Officers (COs), Nurses, Ward Executive Officers (WEO), Ward Community Development Officers and Village Executive Officers (VEO). A checklist for Key Informant Interviews was used to guide the interviews. The types of information that were found

in this method were based on the achievements of CHF and barriers for the majority of HHs from joining CHF together with strengths and weaknesses of CHF.

Quantitative data were coded and analysed using Statistical Package for Social Science (SPSS) whereby descriptive statistics such as frequencies and percentages were employed to describe demographic socio-economic information. Additionally, a binary logistic regression model was used to analyse the influence of social economic factors on CHF membership. The logistic regression model was chosen because it accepts a mixture of continuous and categorical independent variables and for the current case the dependent variable was categorical (0 non-CHF member and 1 CHF member). The likelihood of a household to join was predicted using the following binary logistic model: The model used was as shown below:

$$\text{Logit}\left[p(x)\right] = Log\left[\frac{p(x)}{1-p(x)}\right] = \alpha + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \ldots + \beta_{13}X_{13} + \varepsilon_{13}$$

Where:

Logit $p(x)$ = ln (odds (event)), that is the natural log of the odds of being a CHF member.

$p(x)$ = prob (event), that is the probability of being a CHF member.

$1-p(x)$ = prob (non-event), that is the probability of not being a CHF member.

$Log\left[\frac{p(x)}{1-p(x)}\right]$ = is the logarithm of the ratio of probability of being a CHF member

α = constant of the equation.

$\beta_1 - \beta_{13}$ = coefficients of the predictor variables.

ε = Error term.

$\chi_1 - \chi_{13}$ = predictor variables entered in the model,

which are: χ_1 age (number of years of the respondent), x_2 gender of the household head(1= male, 0 = female),x_3 Education level of the household head (number of years in schooling), and x_4 awareness (1 if respondent is aware of CHF existence, and 0 if not). Others include, x_5 Benefits (1 if member benefited from CHF, and 0 if not), x6 Income (HH earnings of money per month in TZS), x_7 assets (member`s items with monetary value),$x_8$ family size (number of people per household), and $x_9$ Distance (from member`s residents to place of health services provision in km). Others were x_{10} social groups (1 if member of social groups and 0 if not), x_{11} access to credit (1 if having qualifying conditions to get loan, and 0 if not), x_{12}occupation (member`s

economic activities), and x_{13}marital status (1if married and 0 if otherwise like; single, widow, separated).

Qualitative data were analysed using content analysis approach. These are the data obtained from FGDs and KIIs. Therefore, by means of content analysis method, the data collected through verbal discussions were analysed in details whereby recorded discussions were broken down into smallest meaningful units of information.

3.0 RESULTS AND DISCUSSION

3.1 CHF Membership and reasons of not being a member

Community Health Fund (CHF) members in the study area were 86 households (HHs) which accounted for 24.3percent, while 268 HHs which accounted for 75.7percent were non-members of CHF (Table 2). Some of the reasons that were given as to why the majority of the households were non-members of CHF were lack of money and lack of awareness about CHF existence. These reasons accounted for 37.9 and 24.3percent of the respondents respectively (Table 2).These reasons were cited during FGD held in Kasanga Village on 18th December 2018. During FGD, it was revealed that, majority of people are not well informed about the existence of CHF because CHF officials do not visit them for seminars and meetings. Studies by Jane *et al*. (2014) and URT (2001) have reported that, the reasons for low coverage of CHF included poor health services, lack of comprehensive benefit package, and the existence of out of pocket payments. Others included lack of adequate medical supply and equipment at the health facilities, unaffordable health care services, lack of adequate skilled and motivated health providers, long distance from HHs to health facilities, and lack of referral to CHF members. As Msuya*et al.* (2004) argue, CHF has improved access to health facilities for the poor because its members are most likely to seek health care from formal health care providers compared to non-members. In the field, this was evidenced by one household head at Mbuza village who argued that:

> *"… CHF is helpful, though sometimes we do lack medicines from the dispensary, but at least weget advice from Clinical Officers on our problems by using our CHF membership cards instead of out of pocket payments as non-members of CHF are doing…"(Household head from Mbuza village, 14th December, 2018).*

Table 2: CHF Membership and reasons of being not member (n = 354)

Variable	n	%
CHF Membership		
Members	86	24.3
Non-members	268	75.7
Reasons for not being CHF Member		
Lack of money	143	37.9
Lack of awareness	86	24.3
Poor services	44	12.4
Use of private pharmacy	3	0.8
Use of local herbs	1	0.3

Note: n = number of respondents (HHHs), % = percent

3.2 Households' Socio-demographic Characteristics

The HHs characteristics are presented in Table 3. The table reveals that there were 10.5 and 89.5 percent Female Household Heads (FHHHs) and Male Household Heads (MHHHs) respectively compared to national levels of24.5 and 75.5 percent proportions of FHHHs and MHHHs respectively (World Bank, 2015). This implies that FHHHs were fewer compared to MHHHs. This may be due to the reason that many HHs in Tanzania are headed by males. Traditionally, males in many HHs in Tanzania are not close to their families' care for health security. The family's health security issues have been under female domain as females are most of the time close to families. UNFPA (2019) reported that, women should be empowered by men because in most cases they are more involving in caring for family members than men do. Once a family member falls sick, women are the ones responsible for providing health services. Studies (e.g. Waheke, 2015;d Chingonikaya e*t el.*,2018)revealed that FHHHs have fewer chances of participate in community organisations because most of these HHs are headed by males who take liabilities of participating in those organisations whose membership unit is the household. Females believe that by of participating in CHFs in place of men make these women socially accepted and thus have their marriages protected. According to Sikira *et al.* (2010), women who had control over land had also control over the family house. This implies that having control over most valuable resources gives women the means of owning a family house.

The age of the respondents was another factor in this study. The results show that the ages of HH heads ranged from 35 to 59 years (73.5%), compared to those with the age range of 60 years and above (26.5%) (Table 3). This shows that the majority of HHs headed by the elderly may not have the passion of joining the CHF as they are in the age of stable health, leading them to forget those who are in vulnerable age range such as children under 5 years and older people of 60 years and above. UNFPA (2019) revealed that most of married men in the old age are busy with productive jobs hence they do not take care of their dependants. Jane *et al.* (2014) observed that CHF membership tends to increase with an increase of dependants who are at the age range, which is more vulnerable to diseases.

Marital status had similar results to those under sex variable because the questionnaire was mainly administered to household heads (HHHs); and in the study area, as in many other areas in Tanzania, patrilineal system is dominant. That is why men appeared more to be HHHs of married couples. The male respondents were the majority (89.5%), as opposed to female respondents. The respondents marital status were as follows with their percentages in brackets: single. (3. 8%), divorced (1.4%), separated (2.8%) and widows (2.5%). Waheke (2015) conducted a similar study in Songea District, in Ruvuma Region, Tanzania and found that married, widowed, single, separated, cohabiting, and divorced accounted for 71.4, 4.3, 4.3, 4.3, 2.9, and 2.9percent respectively. This means that, in most of the communities in Kalambo District, there are more married respondents than are the respondents in other categories. As Narayan (2010) indicates, married household heads are more likely to engage in community organs than are household heads in other categories. This is perhaps because married couples have great numbers of dependants including children aged below 5 years, hence are at higher risk of having sick members than is the case with HHHs who are single.

As for years of schooling, the results of the current study revealed that 96.9percentof the respondents had 7 years of schooling while 3.1percent had attended 8-11 years of schooling. This means that almost all HHHs had primary education. This finding implies that many respondents had little knowledge on health insurance schemes, specifically the CHF. During the KIIs, this was testified by one of the key informants, on 14th December 2018 at Mbuza village in Mkowe Ward as saying:

> *"…The majority of sick people are complaining of lack of medicines; they don't believe that dispensaries always do not have medicines once they see boxes in shelves, but those boxes are of family planning medicines, gloves, and condoms which are not medicines to heal their diseases. They do not understand what is inside those boxes because they are labelled in English language. Most of the medicines that we do ask for from the Medical Store Department (MSD) are not the ones we are supplied with. This is a challenge that is out of our control…''.*

A study conducted by Waheke (2015) reported that, out of 70 respondents, 68.6percent were primary school leavers; 24.3percent had no formal education and 7.1percentcompleted ordinary secondary school education. In another study, Bahaman *et al*. (2009) revealed that the majority of workers in the informal sector always have low education.

As for the number of HH dependants/members, the results show that the majority (85%) of HHs had 1-10 members, while 15 percent of the HHs had 11-15 dependants (Table 3). This implies that fertility rate was higher in the study area compared to the average Tanzanian household, which has five persons (URT, 2012). This discourages HHs from joining CHF, because the fund limits only six members percard. When the number exceeds 6 members, the HH should have

another card. Furthermore, the majority of HHs in the study area are low-income earners, accounting for 93.8percent of the HHs which had their incomes below 100 000 TZS per month (Table 4). This was reported during FGDs in Singiwe village that, they did not have that amount for joining CHF membership because of lack of market for their crops, which they depend for their livelihood. This is in contrast to what is reported in a study by Narayan (2010). The author indicated that because of having higher numbers of dependants married couples are most likely to engage in social schemes than is the case with single HHs. this is particularly because married HHs are at higher risk of having a sick household member as oppose to HHs who are in other categories.

Table 3: Households' Socio-demographic Characteristics (n = 354)

Variable	N	%
Sex of the Household Heads		
Male	317	89.5
Female	37	10.5
Age		
35-59	260	73.5
60-above	94	26.5
Marital status		
Married	317	89.5
Single	13	3.8
Divorced	5	1.4
Separated	10	2.8
Widow	9	2.5
Education (years of schooling)		
7 years	343	96.9
8-11 years	11	3.1
HH Dependants		
1-10	301	85
11-15	53	15

Note: n = number of respondents (HHHs), % = percent. Further, Table 2 presents marital status, ages of HHHs, education level and family size/HH dependents.

3.3 Households' Monthly income, Assets ownership, and distance from HH to the health facility

Assets ownership was among the variables investigated in the study. Table 4 shows that 336 HHs (94.9%) owned various valuable assets, while 18 HHs (5.1%) had no valuable assets. The assets owned include houses, farms, fishing equipment, livestock such as cattle and goats, furniture, motor cycles and renting buildings. Despite that, most of the HHs owned assets, these asset owners were not members of CHF. This implies that asset ownership has no influence on CHF membership. In Mbuza village FGDs participants reported that their assets were not accepted by the Banks as collateral for loan; therefore, they did not enjoy the benefits of loan. In another

study, Odeyemi (2014) reported that membership to CHF reduces the risk of HHs selling their assets for the sake of getting money for treatment during outbreaks of diseases. This paper, therefore, encourages the HHs to join the fund in order to avoid selling their assets during sickness.

Distance from HHs to Health facilities was one of the factors of concern in this study. The study results (Table 4) revealed that 99.1percentof the households were living close to health facilities, as the distances were not exceeding one kilometre. On the other hand, only 0.9 percent of the respondents were living more than one kilometre from health facilities. This indicates that distance was not a strong factor for HHs not joining CHF because each village in the study area had a dispensary, which was found at the central part of each village and which was easily reachable. Macha *et al*. (2014) revealed that, most of the HHs who lived more than km from health facilities were not members of CHF due to long distance.

Table 4: Households' Monthly income, Assets ownership and a distance from HH to health facility (n = 354)

Variable	n	%
Monthly income (TZS)		
10 000-99 000	332	93.8
100 000-200 000	22	6.2
Assets ownership		
HH owning assets	336	94.9
HH not owning assets	18	5.1
Distance from HH to Health facility (in km)		
Km	350	99.1
1.1-5 Km	4	0.9

Note: n = number of respondents (HHHs), % = percent. Further, Table 3 presents monthly income, assets ownership and distance from HH to health facility in km

3.4 Occupations of the respondents, Loan accessibility, and the use of loan for CHF contribution

Occupation of the respondents was another factor, which was considered under economic activities (Table 5). The results show that the respondents were involved in multiple economic activities including farming (65.8 %,), fishing and farming (17.2%), and small business and farming (8.2%). This shows that majority of the respondents did not depend on one source of income because some of their jobs such as farming were seasonal which takes only four months out 12 months per year. During FGDs on 17th December 2018 participants in Kisumba Village, reported to have been trying to invest in different economic activities but they still had minimal returns due to lack of improved technology. As Waheke (2015) reported, 77.1percent of the respondents in the area of study were farmers; 17.1percent were elderly; 2.9% were involved in business activities; 1.4percentwere pastoralists and 1.4percent were private servants. This implies that the majority of Tanzanians were farmers.

As for loan accessibility, the results showed that 94.4 percent of the HHs had no access to loan, while only 5.6percent had access. as for group of respondents with access to loans, only 4percent used that loan for CHF contribution. This implies that the majority had no access to loans due to the nature of their economic activities which were not friendly to banks and other loan processing institutions. Therefore, they did not enjoy the loan benefits, which would have enabled them in joining CHF. The findings are in line with the findings in a study by Ntuli *et al*. (2017) who revealed that access to credit facilities can increase health security to borrowers and their dependants by directly accessing health services financed by that credit, or indirectly managing contributions of health insurance.

Table 5: Occupations of respondents, Loan accessibility and the use of loan for CHF contribution (n = 354)

Variable	n	%
Occupations of respondents		
Farming	233	65.8
Livestock keeping and small business	22	6.2
Small business holding and farming	29	8.2
Fishing and business	6	1.7
House keeping	1	0.3
Fishing and farming	61	17.2
Farming and livestock keeping	2	0.6
Loan access		
Accessing loans from social groups	20	5,6
Not accessing	334	94.4
Use of loan for CHF contribution		
Uses for contribution	14	4
Not uses	340	96

Note: n = number of respondents (HHHs), % = per cent.

3.5 Factors Influencing CHF Membership among HHs

Binary logistic regression was used to model the selected variables that influence households into becoming CHF members, and the results are as presented in Table 6. The model fitted very well as indicated by the Omnibus Test of the model coefficient which was 317.537 with $p<0.001$ and Hosmer and Lemeshow Test being 1.992 with $p = 0.960$. Because the Omnibus Chi-square was significant ($p = 0.001$), this shows that the overall model predicted the outcome well. Wald coefficients associated with individual independent variables help to realize the relative importance of each independent variable. According to Powers and Xie (2000), the non-zero Wald statistic values indicate the presence of relationships between the predictor and the outcome variables. A greater Wald statistic implies that the independent variable associated with it has a higher contribution to the happening of the dependent variable. In Table 6, the Wald statistic value for Ex-CHF Membership was 10.557 and was statistically significant at $p < 0.001$. The implication of this finding is that people who had already benefited from CHF were most

likely to re-join the fund as they had realized its advantage compared to those who had never been CHF members before.

The results (Table 6) show that, among the eleven (11) variables that were used in the model, three (3) were found to be important predictors of CHF membership as ($p<0.05$). These are awareness of CHF existence, Ex-CHF membership, and HH income. The strongest predictor was Ex-CHF membership, which had a positive regression coefficient (b) of 4.987 and the odds ratio (Exp B) of 146.481. This means that a unit increase in this variable, which was statistically significant at the probability of 0.1percent ($P<0.001$), would increase the chances of a household being a member of CHF by 146.481 units, other factors held constant. This was followed by HH income, which had a negative regression coefficient (B) of 4.474 and the odds ratio (Exp B) of 0.011. This implies that a unit increase in this variable, which was statistically significant at the probability of 0.1percent ($p < 0.001$), would decrease the chances of HHs membership to CHF by a factor of 0.011. Though the majority of HHs in the study area were low income earners, some of the CHF regulations that could encourage an increase of membership were not followed. For example, the CHF policy stipulates that people in the District Council concerned should be involved in setting annual contribution rate, was not followed in the study area. The results are in line with the results in a study by Ndomba *et al*. (2019) which found that, shortage of CHF membership in Mtwara District was caused by lack of awareness of existence of CHF and lack of money for contributing to CHF membership. This was evidenced by all FGDs in the study area; the participants rejected to be involved in setting annual contribution rate as they said that the task was to be done at the District Council level. Also, the policy says that there will be an exemption of payments by poor people who cannot manage to pay annual contribution rate, but this was not practised in the field during FGDs in all areas of this study, similar observation was made by FGDs head at Kasote village on 17th December 2018 as follows:

> *"… I was a CHF member when I had no enough wealth, for now I don't expect to renew my membership because I can afford to go to Sumbawanga Town for health treatment together with my dependants…"*

This finding is in line with the findings of a study by Kamuzora*et al.* (2007) who reported that inability of paying annual contribution is a barrier of poor HHs from joining CHF, from mentioned study, about 38.7percentof rural HHs and 27percent of urban HHs declared that they were mostly not able to pay for health care.

Ex-CHF membership and household income as factors had high influence on households joining CHF membership followed by awareness of CHF existence which had a negative regression coefficient (B) of 2.281 and the odds ratio (Exp B) of 0.102. This implies that a unit increase in this variable, which was statistically significant at the probability of 5percent ($p=0.036$), would decrease chances of CHF membership by 0.102 unit. As reported by Turkson (2009) and Waheke (2015) households that lacked awareness of CHF existence led to a failure ofmany HHs in joining the scheme.

In this study, sex had a negative regression coefficient (B) of 32.367 and the odds ratio (Exp B) of 0.000 (Table 6). This implies that being a male or a female, which was statistically significant at a probability of 5 (P=0.995) had no influence on the chances of household becoming members of CHF. Sex of HHHs may influence CHF membership because the main determinants of the HHs joining the fund are income and awareness. As URT (2017) reported, both Gender Development Index and Gender Inequality Index indicate that women are more likely to suffer from lack of human development than men are due to inequalities in access to education, health services, and economic opportunities. the p-value for HH income was highly significant compared to others, however this was not taken as a leading variable because the regression coefficient was negative. Positive signs in the variables, which had insignificant statistical p-values, were not strong predictors in influencing the CHF membership compared to the variables with statistically significant p-values. However, all the variables used in the model had influence on HHs membership to CHF.

Money saving had a negative regression coefficient (b) of 33.386 and the odds ratio (Exp B) of 0.000 (Table 6). This implies that a unit increase in this variable, which was statistically insignificant at a probability of 5percent (p=0.995), would decrease CHF membership chances by a factor of 33.386. This is because savings may either influence a particular HH into joining the scheme as he/she is able to pay the fee obtained out of the savings, or the HHs may not join the fund, as they can afford to pay for health care services due to possessing of enough savings. Studies (e.g. Mtei and Mulligan, 2007;Marwa*et el*., 2013) indicate that wealth of HHs or money can affect positively or negatively households` chances of joining CHF membership. It is always the case that middle-income and poor HHs join the scheme the most compared to high income earning HHs.

Training on CHF matters among HHHs had a negative regression coefficient (b) of 1.208 and the odds ratio (Exp B) of 0.299 (Table 6). This implies that a unit increase in this variable, which was statistically insignificant at a probability of 5percent (p=0.647), would decrease the chances of CHF membership by a factor of 1.208. Training of any HH member on CHF matters had a negative regression coefficient (b) of 3.017 and the odds ratio (Exp B) of 0.049(Table 6). This implies that a unit increase in this variable, which was statistically insignificant at a probability of 5percent (p=0.246), would decrease the chances of CHF membership by a factor of 3.017. Training on the CHF, results from the regression provide contrastive expectation of the existing knowledge that those who had attended training had higher possibility of acquiring the intended vision and joining the fund. Studies by Temba *et al*. (2013) and Turkson, (2009) reported that HHHs training on CHF existence and its benefits could stimulate the adoption of its membership. This was also observed during the FGDs held at Kasote village on 17th December 2019 and Kasanga Village on 18th December 2019 that there was no training from CHF officials that had been offered to any of these villages.

Assets ownership had a positive regression coefficient (B) of 0.364 and the odds ratio (Exp B) of 1.439 (Table 6). This implies that a unit increase in this variable, which was statistically

insignificant at a probability of 5percent (p=0.725), would increase the chances of CHF membership by a factor of 0.364. This is probably due to the reason that most of the HHs in the study area had homogeneous characteristics in terms of assets ownership as Table 4 shows that 94.9percent owned assets of similar kind. Those with a low stock of resources to draw on in the times of need are asset poor (Robert, 2008). This asset poverty may leave them vulnerable to unexpected economic events making them unable to take advantage of the broad opportunities offered by a prosperous society. On the other side, Msuya *et al*. (2004) reported that membership to the CHF reduces the risk of HHs selling their assets for the sake of getting money for treatment during diseases outbreak.

The use of received loan had a negative regression coefficient (B) of 13.434 and the odds ratio (Exp B) of 0.000 (Table 6). This implies that a unit increase in this variable, which was statistically insignificant at probability of 5percent (p=0.997), would decrease the chances of CHF membership by a factor of 13.434. This means that HHs with higher loans were considered as economically good and could afford the costs of health services out of CHF, compared to those with fewer loans.

Table 6: Socio-Economic factors influencing Community Health Fund membership

Variables in the Equation	Coefficient B	S.E.	Wald	Sig.	Exp(B)
Sex	-32.367	5476.972	0.000	0.995	0.000
Awareness	-2.281	1.086	4.408	0.036*	0.102
Money saving	-33.386	5476.969	0.000	0.995	0.000
Ex-CHF membership	4.987	1.535	10.559	0.001*	146.481
HHH training on CHF	-1.208	2.640	0.209	0.647	0.299
HHM training on CHF	-3.017	2.602	1.344	0.246	0.049
HH income	-4.474	1.101	16.519	0.001*	0.011
Assets ownership	.364	1.034	0.124	0.725	1.439
Type of HHH	36.320	5476.973	0.000	0.995	5.937E+15
Access to loan	15.631	3867.309	0.000	0.997	6142576.286
Use of loan	-13.434	3867.309	0.000	0.997	0.000
Constant	29.899	5476.969	0.000	0.996	9.664E+12

Omnibus Tests of Model Coefficients (Chi-square = 317.539; Sig. = 0.001); Cox & Snell R Square = 0.592, Hosmer and Lemeshow Test (Chi-square= 1.992; Sig. = 0.960); Nagelkerke R Square = 0.884.

Generally, the model showed that the used variables fitted well; and among the eleven variables, which were used, three of them were found to be significant to this study. These include awareness of CHF existence in study area, income that showed that the majority of HHs were too poor to join the Fund, and the third factor was ex-CHF members who would most likely renew their membership.

4.0 CONCLUSION AND RECOMMENDATIONS

Binary logistic regression results showed that ex-CHF membership, household income, and awareness of the existence of CHF had significant influence on the chances of households being members of CHF. Therefore, it is concluded that CHF membership is more influenced by these factors. With regard to ex-CHF membership, the study results showed that households that previously benefited from CHF would more likely renew their membership after the expiry of their membership, which always lasts for a year. Unlike ex-CHF membership and community awareness, which had negative influence on HHs joining the fund, the majority of HHs were not aware of CHF in their areas and thus could not join CHF. Household incomes as one of the significant factors in this study were observed as a barrier to CHF membership. It reduced the influence of people from joining the fund because many HHs had similar earnings and low income. In addition, their income is not much stable due to the nature of their economic activities, which were mainly agricultural based, depends on crops yields, which were seasonal. Therefore, they only earn money during crops selling seasons.

In view of this conclusion, it is recommended that the Local Government Authorities (LGAs) which, according to the CHF Act, have the mandate of supervising the existence and strength of the fund should make close supervision for CHF operations according to their policies whereby people in the District Council concerned should be involved in setting contribution rates. In addition, poor people who are incapable of contributing the amount approved should be exempted as the policy says. The Ministry of Health, Community Development, Gender, Elderly, and Children (MoHCDEC), through the Medical Stores Department (MSD), should supply medicines to dispensaries according to their needs. In addition, CHF members should be given referrals from dispensaries to higher levels of health services. Seminars should be conducted so that many people are exposed to CHF as much as possible for the study confirms that little awareness on CHF is one of the factors limiting many HHs from joining the fund. Rating the amount of money as a factor for HH membership to CHF should reconcile with HHs members in the area. This can put them in a position of asserting that the amount to be paid should be that which HHHs can afford. Those who are confirmed as too poor to afford paying the agreed amount should be given special cards that would assure them of better access to health services free of charge. Finally, CHF beneficiaries should be encouraged to retain or revive their membership after the expiry as the study shows that most of them show a desire of remaining members considering the benefits they have been receiving in the course of their membership. If implemented, these recommendations will lead to sustainability of the CHF and improvement of health care services in the respective communities as per the main objective of introducing the CHF.

5.0 Contribution of the study to the body of knowledge

Generally, this study contributes knowledge generated by other studies showing that majority of people are not covered by CHF due to lack of awareness of its existence. The contribution rate of amount is higher compared to actual earnings of targeted group. Therefore, this study will assist CHF official to boost poor performance of the scheme, which has been caused by the failure of taking recommended measurements for improving the fund. Among these, include involving individuals in setting the amount, which is affordable by HHHs as per the health policy that instructs for an increase of availability of drugs in the health facilities and conducting seminars on community awareness on the existence of CHF.

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