

Harnessing Social Capital to Improve Food Security of Peri-Urban Households. Experiences from Kisumu City, Kenya

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Received September 10, 2019; Revised October 15, 2019; Accepted December 02, 2019

Abstract Although significant progress has been made in recent decades to reduce food insecurity in developing countries, a larger percentage of the peri urban population still experiences food insecurity. The peri urban poor, as a particularly marginalized group, and who constitute the majority of the urban population are unfortunately the most vulnerable and disproportionately affected by food insecurity. Many studies, especially those focused on reducing poverty, do not explicitly acknowledge the significant role social capital could play in ameliorating food insecurity especially in the peri urban settlements. This paper explores the determinants of food insecurity and then attempts to demonstrate the contribution made by social capital to the improvement of food security of peri-urban dwellers. Using systematic random sampling, 40 households in Nyalenda, a peri urban informal settlement in Kisumu City were surveyed using a household questionnaire. Data was analyzed by descriptive statistics and a Multinomial Logistic regression model to identify the determinants of food insecurity. The results show that household food security is significantly influenced by livestock and household assets, land size, dependency ratio, and access to market, gender, education level, and labor availability. On the other hand, social capital membership to groups influenced positively the food security status of households. This suggests that intervention promoting food security of peri urban household need to expand their focus not just on livelihood improvement, but also in building the capacity of household's social capital to help improve food security. We recommend that policy intervention promoting food security of peri urban household to expand their focus to include building of capacity of household's social capital networks. Additionally, a systematic effort is needed to harness social capital in improving food security intervention in peri urban areas where majority of poor urban dwellers are located.

Keywords: *peri urban areas, food insecurity, social capital, poverty reduction, informal settlements*

Cite This Article: George G. Wagah, and Mathenge Mwehe, "Harnessing Social Capital to Improve Food Security of Peri-Urban Households. Experiences from Kisumu City, Kenya." *Journal of Food Security*, vol. 7, no. 6 (2019): 196-205. doi: 10.12691/jfs-7-6-2.

1. Introduction

Urbanization of poverty, food and nutrition insecurity, feminization of poverty and deprivations are critical challenges facing a large proportion of urban and peri urban households in developing countries [1]. Although significant progress to reduce food insecurity in developing countries has been made in recent decades, larger percent of the urban population still experiences food insecurity. The urban poor, as a particularly marginalized group, and who constitute the majority of urbanites are unfortunately the most vulnerable and disproportionately affected [1,2]. Much attention in addressing food security seems to be geared towards increasing rural smallholders' agricultural productivity despite the urban poor increasingly becoming more vulnerable to high food prices, inadequate food access and distribution [3]. It seems, the urban food insecurity

problem is obscured by more urgent urbanization problems including high unemployment, insecurity, informal development, environmental degradation, overcrowding, dysfunctional infrastructure, spatial exclusion, and declining social services [1,4-9]. The fate of the urban poor is aggravated by the policymakers' tendency to view food insecurity as a rural problem, and the general perception that urban food insecurity is an individual or household problem that doesn't necessarily warrant political attention [8]. Even the current global policy discourse do not explicitly provide a way forward on what need to be done to provide adequate quantities of nutritious and affordable food for the vulnerable peri urban inhabitants [10]. The implied assumption that increasing rural smallholder's agriculture food production will somehow make the urban poor less food insecure seem not to be the solution [8]. As a matter of fact, vulnerability to poverty and food insecurity of urban poor has even been observed to be greater than the rural households [11].

In Kenya, the rapid urbanization being witnessed in many towns has resulted to increased urban poverty, and food insecurity [5,12]. Increasingly, the most vulnerable populations are in peri urban areas where majority of informal settlements are to be found. In particular, the large numbers of people living in peri urban informal settlements grapple with environmental, socio economic and spatial challenges [6,7,9]. According to Crush and Frayne [13], these problems undermine the ability of the chronically-poor to access sufficient food, hence the high food insecurity. In Kisumu City, where this study was carried out, there is a considerable spatial variation of food insecurity and poverty. The city is categorized as within the poorer regions in the country with higher level incidence of poverty than national averages - 48% against a national average of 29% [14]. According to Mathenge *et al* [2], Kisumu poverty is manifested by poor infrastructure, high rates of illiteracy, inadequate foodstuff, unsanitary and dilapidated buildings especially in slum areas, high mortality rate, congestion and overcrowding and high crime rates. Though there has been targeted poverty alleviation interventions by national and international organizations in Kisumu County, many of them appear to have failed, if current level of poverty and deprivation is to be considered. Awange & Onganga [15] notes that the main reasons attributed to the failures of these interventions lie in their ambiguity in fully understanding poverty causes and the policies adopted for poverty eradication. Unbalanced resource allocation and lack of prioritization of the most vulnerable groups and informal areas through pro-poor actions in poverty eradication contributes to the higher incidences of poverty and deprivations in the informal areas of Kisumu. Tackling these problems will require substantial involvement and cooperation of the urban residents [16,17].

The role social capital could play in improving food security for the poor peri-urban households, especially those living in the informal settlements have little been explored. In the absence of or limited access to formal livelihoods, peri urban communities over time, builds diverse risk-sharing and risk-pooling safety nets and arrangements to offer alternative livelihood resources that they draw upon [18,19,20,21]. These safety nets and arrangements are built on mutual support founded on social capital for guarding and buffering against shocks [21]. Identifying and harnessing these social capital is considered an important step of improving resilience, livelihoods and food security of the poor peri urban dwellers. Social capital has been explored in literature as an asset for poverty reduction especially in rural areas [22,23,24]. However, in the peri-urban environment setting, social capital has not been fully explored as a capital asset that can have an influence on the livelihoods of vulnerable peri-urban poor [4,25]. Owing to the dynamism of urban environment, the level of social capital can be presumed high, since residents have higher chances to interact with one another, creating social networks and relationships as a result. The resulting social capital if tapped, can be used to leverage households' wellbeing and livelihoods in mitigating food insecurity. However, there is little information on how social capital influence access and use of resources at individual and household level for improving peri urban communities

against food insecurity and other shocks. Additionally, there are no clear policies on the role of social capital for enhancing the livelihoods of the poor peri urban households with implications to social development policy. This paper aims to fill in this gap by; (i) identifying the determinants of food insecurity and; (ii) examining the role of social capital in influencing and ameliorating food insecurity of peri urban slum dwellers. We hypothesize that peri urban households having higher social capital may have higher likelihood of increased food security than those with lower social capital. This study provides insight on the determinants of food security and the relevance of social capital in enhancing food security and livelihood outcome for the peri-urban poor.

1.1. Linking Social Capital, Food Security and Livelihood Improvement

The plight of peri-urban poor households struggling with high level poverty and food insecurity has received little attention [26] and not much is known on how food security relates to socio characteristics of the urban residents. In particular, alleviating poverty and food insecurity and the question why some households in peri urban areas are able to tap livelihood capital assets to ameliorate food insecurity more than others, is only partially understood. A number of studies [27,28] have shown associations between social capital and positive livelihood improvement in rural areas, yet only a few have attempted to link social capital and food security. FAO [29], defines food security as the physical, social and economic access to sufficient, safe and nutritious food which meets individual or households dietary needs. Food security by households can be enhanced through social capital that is manifested through collective action such as sharing information and resources either through community group, kinship ties, or formal or informal social networks. For example, it has been found that if household may not have access to information about land, credit, or other productive capital resources, they may be more vulnerable to food insecurity than those who have access [30]. As such, households with greater access to a variety of resources arising from linkages, partnerships and other community endowments are expected to be more effective at achieving improved livelihoods and food security than those with low resource access. Therefore, examining the mechanisms under which various forms of social capital enhance the potential or facilitate food security for the affected households or communities is paramount.

Social capital, being a wide and multidimensional concept, is viewed and used differently across and within sociology and economic literature. Coleman [31] defines social capital as a set of socio-structural resources that are embedded in structuralized social networks and connections between persons or groups of people which facilitate actions. Bourdieu [32] reported that these social networks and relationships accrue shared norms and values which enable individuals or households who belong to them to access and exchange different resources. Expanding on the same, Portes [33] defined social capital as the ability of individuals to secure benefits through membership in networks and other social structures.

Social capital has also been seen as including social and political environment that shapes social structure and enables norms to develop [34]. Burt [35] simplified social capital to mean family, friends, colleagues, and more general contacts through which one receives opportunities to use their financial and human capital. There are two forms of social capital [36]; the structural social capital which entails the properties of the networks and relationships that facilitates information sharing, collective action and decision making including institutions that bring people and groups together. The other is cognitive social capital which is more subjective and intangible concept that reflects people's perceptions of trust, attitude, shared values, norms, beliefs and reciprocity.

Volume of exploratory studies points to a significant and positive impact of social capital in enhancing the welfare and boosting the livelihood of rural poor households by improving their income [27,37,38,39]. It has been argued that improving the households' social capital is seen as an alternative to improving household income and this has been exploited as a tool for poverty reduction. For example, the empirical results of Knack and Keefer [40] found that the impact of social capital is progressive with higher levels of social capital that in turn is associated with subsequent improvements in the distribution of income. Knack's subsequent publication in year 2000 reported that greater social capital resulted in direct income gains and more widespread and efficient delivery of services [40]. In Malawi for example, the study by Dzanja, Christie, Fazey, & Hyde, [41] found that household food security status was significantly improved by membership to farmers' organizations, household social network size and engagement in voluntary activities.

Utilizing several indicators of social capital; including groups' collective action, networks, trust and solidarity, and cooperation, Roslan *et al.* [42,43], examined the impact of social capital on poverty reduction in Malaysia and found that social capital was able to significantly reduce the incidence of poverty. It also significantly increased the quality of life of rural households. In yet another study by Okunmadewa *et al.* [44], using proxy indicator of membership and participation in community associations, he found social capital to be instrumental in reducing rural poverty. Likewise, social engagement and social participation in social groups and networks activities by households' members were found to significantly contribute to improved food and nutrition access [45]. These findings have also been echoed by Crowe & Smith, [13] who concluded that households with higher levels of social capital are less likely to experience hunger than communities with low levels of cultural and social capitals.

The influence of social networks on farmer's probability of adopting productivity enhancing technologies and innovation increases if one belongs to a social network where farmers could learn, observe or initiate use of new technologies through other individual farmers or groups [46]. This could in turn help improve access to credit and marketing resources [47], and help in reducing the risks and costs of adopting these technologies.

Economic benefit accruing from social capital as reported by various studies [48,49,50,51] include; facilitates mutually beneficial collective action and transmission and sharing of knowledge and information. In addition, it

enhances sense of belonging, community cooperation, civic engagement and norms of trust and reciprocity. Social capital has also been found to significantly empower women. For example, cooperative societies in rural Nigeria that disbursed fund to women helped to improve their livelihood by tackling the 'deep rooted cultural and economic gender based constraints' [52]. In addition to affecting the movement of information useful to the poor, organizations with strong social capital have contributed to more inclusive forms of urban governance, helped build local negotiating capacity and linkages with product and input markets [53].

2. Data and Methods

2.1. Study Setting

This study was conducted in Kisumu city which has more than 60% of population living in informal settlement [14]. Kisumu is a port city on the shores of Lake Victoria in the Western part of Kenya and is the third largest city in Kenya. It is located at the Winam Gulf of Lake Victoria Basin and covers an area of approximately 417 Km², of which 297 Km² is dry land and approximately 120 Km² under water, [14]. The city's estimated population as of Year 2012 was about 568,909 people. It is one of the fastest growing cities in Kenya with an urban growth rate estimated at 2.8% p.a. The urbanization challenge of Kisumu City, like other developing cities in Kenya is that it has been developing against a backdrop of weak urban planning policies and frameworks. As a consequence, most of urbanization is happening informally. This is evidenced by uncontrolled slum formation, with slum settlements encircling the entire inner planned area of the city. With increasing urbanization, and as land parcels become smaller and smaller due to subdivisions, communities have been pushed to subdivide rural and peri urban hinterlands originally preserved as communal land.

The area chosen for this study is Nyalenda (Figure 1), one of the seven peri urban informal settlements located on Kisumu City's peri-urban fringe, approximately two kilometers to the south and southeast of the Kisumu City center. The slum covers an area of about 2.4 km² and is administratively divided between two electorate wards, namely Nyalenda A and Nyalenda B. According to the 2009 population census, Nyalenda A&B wards had 48,004 people, the highest populated unplanned settlement in Kisumu city. Despite being nominally included in Kisumu City urban planning efforts, Nyalenda and other peri-urban settlements are not planned. The lack of planning is evidenced by the ad-hoc development, sporadic, haphazard, and increasingly common high-density building footprints and the crooked, winding streets. Its low-lying land is subject to environmental degradation and flooding from Lake Victoria, and often a breeding ground for insect-borne disease in the swampy parts. Nyalenda slum is characterized by lack of basic infrastructure, has high unemployment rates, poor water and environmental sanitation, poor housing, insecurity, violence, and poor health indicators. Nonetheless, it has dynamic socio economic activities resulting from the neighborhood's diverse population.

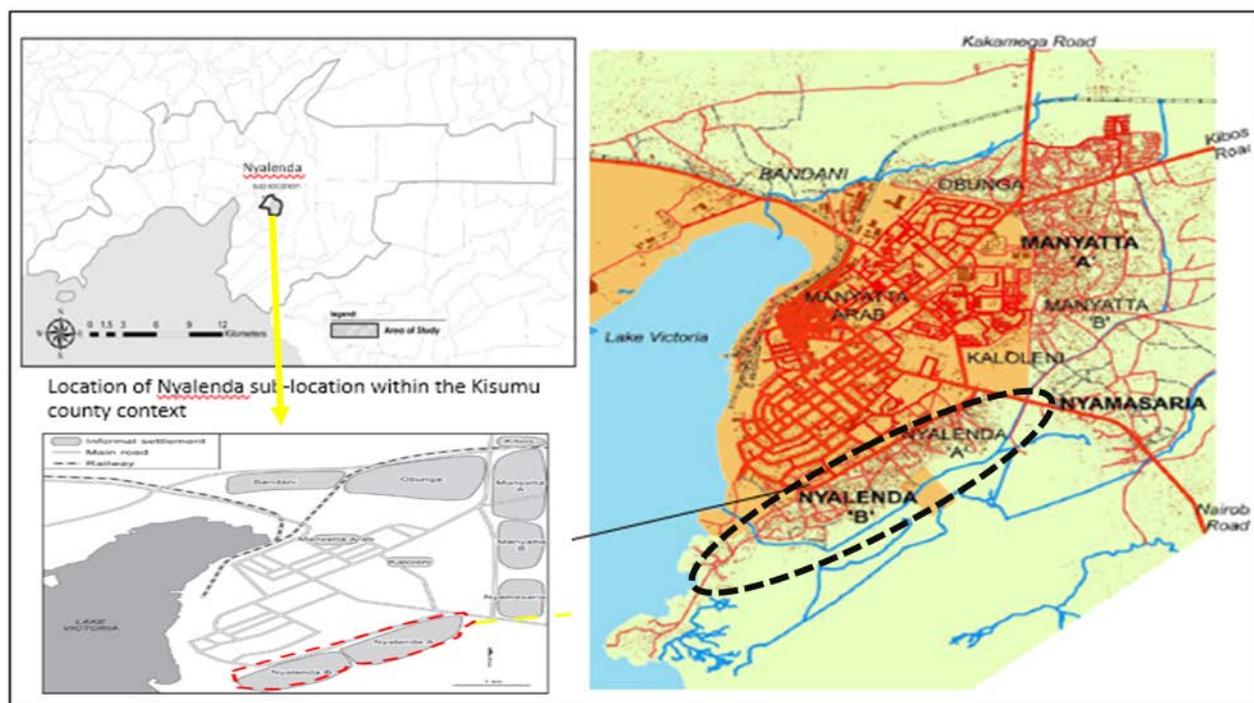


Figure 1. Location of study area within the Kisumu city

2.2. Research Design and Data Collection

Triangulation method was used which included the use of interviews, focus group discussions (FGDs), direct household observations, key informant interviews, and household survey questionnaire. The primary data was collected using a detailed social capital assessment household questionnaire. The questionnaire was administered face to face to gather data at the individual household level that was then aggregated to obtain collective results. Research assistants who understood better the local condition and conversant with the local language were trained to assist in administering the questionnaires. Households living in Nyalenda slum were taken as a sampling frame, where 40 households were selected using simple random sampling technique, for maximum variability in the determination of the sample size, a 95% confidence level and a p-value of 0.05 was assumed.

For this study, we defined social capital as a household's membership in networks (e.g. groups, associations) that facilitate improvement of the food security status at household level. As social capital is multidimensional, manifesting itself through diverse levels, proxy variables were used to collect data at the households. These following variables were included; social groups associations, social networks, and group membership. Data collected on social capital was primarily on structural social capital. Household involvement in social networks is affected by their individual characteristics. Thus, data was collected on household characteristic including age, gender, educational level, socio-economic status, employment and income levels and number of children in households. The selection of the social capital proxy variables was informed by the observation of spatial manifestations of social capital in the study area. FGD was conducted with group residents selected from the informal settlement in order to gather in-depth understanding of social capital endowment, and how they use it to improve

their livelihood. The researchers also used personal observations, transect walk and informal discussions to generate primary qualitative data. Finally, the secondary information was gathered mainly through current and relevant journal articles.

2.3. Data Analysis

We used Statistical Package for the Social Sciences (SPSS) software to analyze data. Descriptive and inferential statistics using mean, standard deviation and percentages were used to summarize data, the results are presented in Table 2 and Table 3. A multinomial logistic regression (MNL) model was carried out in SPSS software to explore the determinants of household food security. The MNL provides for prediction of factors between the dependent variable and other independent predictor variables. Food security status of the household was used as the dependent variable and had two categories; 1= Yes (household experiencing food insecurity) and 0= No (household that are food secure). The predictor variables hypothesized to determine household food security used in the analysis are illustrated in Table 1. Linear regression was performed to test for multicollinearity between the categorical dependent variable and the independent variables. Those variables found with a VIF tolerance value of less than the difference between 1 and the adjusted R were excluded in the MNL analysis. In exploring the association between food security and social capital, multinomial logistic regression was used. Six indicators of social capital including; membership to group, position in group, frequency of meeting, participation in group, benefits from group and satisfaction with group were included in the MNL model for analysis. In this analysis, food security was treated as the reference category and was compared with other independent categorical variables as illustrated in Table 4. The resulting MNL model (Table 4) significantly fits the data ($\chi^2=35.902$, $df=19$, $p=0.011$).

Table 1. Variables hypothesized to influence food security and their expected sign

Variable	Variable Description and measurement unit	Expected sign
Sex	Binary, 1 if head is male and 0 if female	+/-
Age	Continuous, Age of head in years	+
Education level	Categorical, head level of education	+
Dependency ratio	Continuous, number of years of schooling	+
Occupation	Categorical, head occupation	+
Livestock assets	Continuous, Log of number of livestock	+
Household assets	Continuous, Log of households assets in KSH	+
Land size	Continuous, Log of land size of the household in acres	+
Access to agric. credit	Household head ever accessed agricultural loan or not	+
Distance to market	distance to the nearest market	+
Distance to tarmac road	Distance to the nearest tarmac road	+
Social Capital Variables		
Membership to group	Binary, 1 if head belong to a social network and 0 otherwise	-
Position in group	categorical,	+
Frequency of meeting	categorical,	+
Participation in group	binary,	+
Benefits from group	categorical,	+
Satisfaction with group	categorical,	+
Labor availability	Binary, 1 if head has enough family labor and 0 otherwise	+/-

Table 2. Variables and their descriptive statistics

	Mean	Std Dev.
Log Livestock assets	.406	.245
Log household assets	.415	.150
Log land size	.115	.200
Log age in years	.272	.153
Sex of household head	1.60	.496
Dependency ratio	1.732	2.074
Level of education	2.20	.966
Occupation of household head	3.75	.670
Membership to group	1.05	.221
Position in group	1.78	.423
Frequency of meeting in group	1.10	.304
Participation in group activities	1.05	.316
Satisfied in group performance	1.08	.267
Benefits received from being a group member	3.93	1.439
Influence of social capital on farming activities	3.15	.736
Family members provide enough labor to farming activities	1.62	.483
Experience food shortage in our household	1.33	.474
Ever slept hungry for lack of food	1.63	.490
Food from farming enough till next harvest	1.58	.501
Afford to eat 3 meals per day	1.63	.490
Buy any food for family consumption	1.08	.267
Money spent buying food	1.13	.335
Distance to formal/informal market	3.40	1.851
Distance to nearest tarmac road	2.68	1.542
Access to agriculture loan in the last one year	1.60	.496

3. Results and Discussion

This section presents the major findings and discussions of the study. Table 3 shows socio-economic characteristics of the sampled households. As depicted by the results, 40.5% of the sampled households were male headed while 60% were female headed. The majority of the respondents, (65%) of sampled households experienced some level of food insecurity and 35% reported to be food secure. For

those engaging in farming activities, more than half of the sampled respondents (58%) barely produced enough food to sustain them till the next harvest and only 43% of household reported to produce enough food. This can explain why a large percentage of households (82%) said they buy food to supplement their family consumption. About 85% of household spend Kshs 5,000 per month to buy food, an expense that is quite high based on the meagre income households reported to earn. More than

half of the households (60%) could not afford a three course meal per day and only 35% of households said they could afford. Household diets were found to be poor with 45% of households reporting that they rarely eat balanced diet at least once a day. Regarding coping strategies, the most frequently observed suboptimal coping strategy among inhabitants of the Nyalenda slum included, selling their livestock assets to buy food, reducing the number of meals, borrowing food, and eating less preferable foods. The level of income was very low, with 65 % of household earning less than 10,000 Kenya shillings from on-farm and non-farm sources. The income sources was varied with 89% of the surveyed slum dwellers reported having a regular source of livelihood from peasant farming activities and only 11% were in self-employment (11%). The households which did not have any source of livelihood depended on menial job, borrowing from friends and relatives for survival.

3.1. Determinants of Household Food Security

As illustrated in the MNL model results (Table 4), factors that were found to significantly influence household food security included; livestock assets, household assets, land size, dependency ratio, access to market, gender, education level, and labor availability.

The result of the model indicate that education negatively and significantly influenced household food

security at 1% significant level. The odd ratio of being food secure when you are a member of a group increases from 0.001 to 2.044 for each unit increase of education of a household. Low education level could affect households' social capital endowment since individuals may not take up active roles beyond ordinary membership, probably due to feelings of inadequacy. This would mean that education play a key role as it would induce higher participation in the social groups and networks. However, in the peri urban informal settlement, education levels were found to be low, with just slightly less than half of the household heads (45%) having primary education, 28% had secondary level education and only 5% reporting to have university level education. This shows some disconnect between slum dwellers and institution of higher learning. The reason that could be attributed to this is high illiteracy level (23%) amongst the sampled respondents. With regards to household head skills endowment, 82.5% had no skills in modern farming while only 17.5% said they had some level of skills. Low education levels are associated with low agricultural skills. In addition, the low access to formal agriculture training by majority of households (62.5%) against 37,5% who had been trained means that household food production methods was affected hence susceptible to food insecurity. this may explain why majority of interviewed respondents practiced subsistence agriculture(89%), which do not depend so much on skills and training.

Table 3. Results of descriptive statistics of variables used in this study

		N	Marginal Percentage
Experience food insecurity in household?	Yes	24	64.9%
	No	13	35.1%
Gender of household head	Male	15	40.5%
	Female	22	59.5%
Level of education	Never went to school	9	24.3%
	Primary education	16	43.2%
	Secondary education	10	27.0%
	University education	2	5.4%
Primary occupation	Self employed	4	10.8%
	Farming	33	89.2%
Access to agriculture loan in last one year	Yes	15	40.5%
	No	22	59.5%
Family members provide enough labor to farming activities	Yes	14	37.8%
	No	23	62.2%
Food from farming enough till next harvest?	Yes	16	43.2%
	No	21	56.8%
Social capital variables			
Membership to group	Yes	38	95%
	No	2	5%
Type of social group	Farmers group	31	83.8%
	savings & credit	6	16.2%
Position in social group	Official	9	24.3%
	Ordinary Member	28	75.7%
Frequency of group meeting	Weekly	34	91.9%
	Monthly	3	8.1%
Participation in group activities	Yes	37	100.0%
	Social welfare	11	27.5%
Benefits from group	Buy inputs(seeds, fertilizer)	3	7.5%
	Loans & savings	24	60%
Satisfied in group performance	Yes	35	94.6%
	No	2	5.4%

Table 4. Logistic Regression results showing determinants of food insecurity

Independent variables	Model 1		Model 2	
	food security (without social capital variables)		food security (with social capital variables)	
	Coefficient	Odds ratio	Coefficient	Odds ratio
Intercept	-5.575		-28.835	
Log livestock assets	-17.231***	3.2	24.009	26
Log household assets	-11.190**	1.3	67.840	28
Log land size	-11.468**	1.04	-37.921	3.3(9.6E-17)
Dependency ratio	.865**	2.37	-2.358	.095
Access to market	-2.609***	.074	-2.043	.130
Access to tarmac road	1.775	5.89	-.562	.570
Age	1.071	2.91	6.144	465.723
Gender	-5.385*	.005	-2.667	.069
Education	-7.396***	.001	22.040	2.044
Occupation	-16.988*	4.1	-16.988	4.1
Labor availability	-8.292**	.000	-8.292	.000
Access to agric. loan	-1.780	.169	-1.780	.169
Social Capital variables				
Position in group			-12.032	5.9(4.9E-06)
Membership to group			7.700*	7.446
Frequency of group meetings			-15.300	2.1(6.0E-07)
Participation in group Activity			17.300	3.5
Group performance			-2.800	.055
Benefits from group			2.070***	7.932
The reference category is:	food insecurity			
Maximum likelihood estimates				
Dependent variable	Household food insecurity			
Number of observation	40			
- 2 Log likelihood model fitting	Intercept only: 50.466, Final: 14.544			
Chi-square test	35.902			
Degrees of freedom	19			
Significance	0.011			

***, **, * Significant at 1, 5, and 10% probability level, respectively.

Occupation of the household head negatively and significantly influenced household food security. Interpretation of the odd ratio reveals that, *ceteris paribus*, the probability of household being food secure decreased by a factor of 4.1 if the household head has occupation. This could imply that the type of occupation households engaged in did not contribute much to addressing food security situation of the household. In supporting this argument, the study found out that majority of household head (88%) occupation was subsistence farming with only a handful (10%) who were in self-employment. When social capital parameters were included in the model, the odds ratio did not change. Meaning that social capital had a minor small effect on food security on those households where the head of household was both employed and also member of a social group. On the other hand, livestock assets and household assets endowments had a positive and significant influence on household food security status at 1% and 5% probability level, respectively. This means that household having more livestock and households assets are likely to use them to improve their food security. When social capital variables were added to the model, food security of household improved significantly. The probability of being food secure increases by 26% with a unit increase of livestock assets if a household has social capital.

Land size (in acres) was found to positively increase food security levels of households at five percent significant level. The probable explanation is that as land

size increases, a household may want to use maximally to produce more food. In addition, when social capital parameters were added to the model, food security improved. Meaning that a combination of bigger land size with household head being a member of a group significantly increases the possibility of a household being food secure. This could probably be that those with larger land sizes could get more access to resources, credit and information on a technology that they may use to improve their productivity from their social groups. In the study area, small land ownership was found to be a major hindrance for households to increase food production and thus food security. Majority (67.5%) of interviewed households owned less than 1 acre of land, with only 12.5% owning between 1 to 2 acres and 10% having more than two acres. Majority of those who owned land had no title deed (48%) and only a quarter of household (25%) had title deeds. Insecurity of land tenure has been found to impact negatively on food productivity, with those with secure tenure having more investment in food production than those without.

Gender was also found to be a determinant of household food security status. The probability of being food secure increased to 6.9% from 5% when a household head was a member of a social group. In majority of households, its men who owned land (75%) while women constituted just 12.5%. Joint land ownership between husband and wife was also very low at 7.5%. On the other hand, dependency ratio had a negative influence on food

security at 5% significant level. It could mean that larger family sizes increased the burden of household as there are more mouths to feed. Whereas access to market and availability of labor were found to have significant and negative influence on household food security at 1% and 5% probability level, when social capital parameter were added to the model, both were found to have positive influence. This could probably mean that membership to groups and networks provided ready availability or access to labor from the group and also market information and other benefits (see Figure 3).

Regarding social capital and its hypothesized influence on household food security, the findings indicate that social capital, as measured by membership and participation in groups was relatively high in Nyalenda slum. From the MNL model results (Table 3), households' membership in social group positively and significantly influenced household food security status. Majority (80%) of the sampled dwellers were found to be members of local social groups and merry-go-round associations and only 2.5% reported not to belong to any group.

Again, participation in group activities by members was relatively high. The highest level of participation in social group among the households in Nyalenda was in farmers groups and saving and credit groups. In addition, social capital's membership to groups and benefits received from these group influenced significantly food security situation of households (Figure 1). Participation in these farmers groups was high (97.5%) since they served as a means to obtaining information through meetings, agricultural food production methods, information on farm inputs and also provision of unsecured loans to members (see Figure 3). More than half of the households (52.5%) perceived social capital to have a high influence (Figure 2).

Benefits accrued from social group had a positive influence on household food security at 1% significance level. The main benefit they receive from these group include savings, where 25% of members reported to save and receive loans from the group. More than 60% of households said social groups was a source of loans and savings (Figure 3).

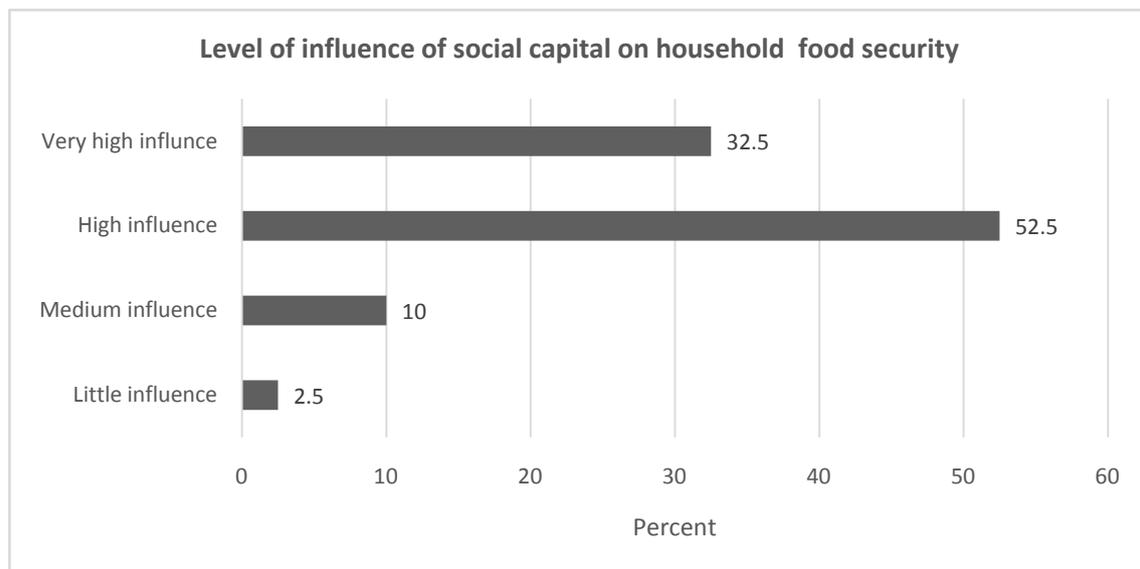


Figure 2. Level of influence of social capital on food security situation of households

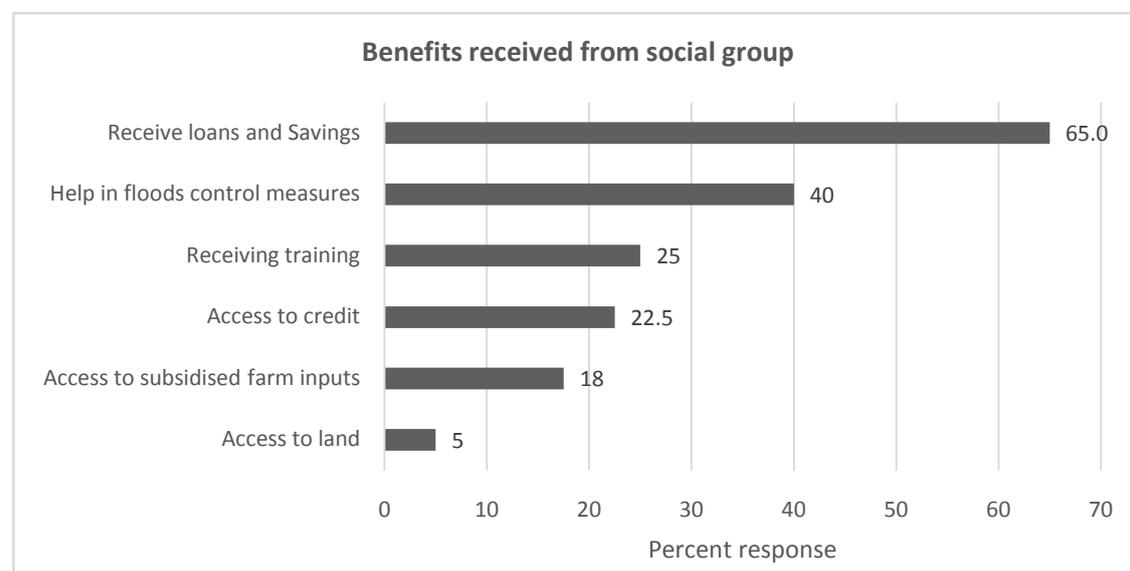


Figure 3. Benefits received by members of social group

4. Conclusion and Recommendation

This paper sought to explore the determinants of household food security, and explored if household's social capital contributed to improving food security situation of households in the peri urban areas of Nyalenda. The paper has demonstrated empirically that social capital had an impact on household food security and as the MNL results have shown, it could increase the likelihood of household being food secure. Social capital membership to groups and benefits received from groups also influenced positively the food security status of households. The other significant determinants of household food security include livestock assets, household assets, land size, dependency ratio, access to market, gender, education level, and labor availability factors. A systematic effort by policy makers is needed to focus and harness social capital in improving food security interventions in peri urban areas. At the same time, enhancing the household livelihood through building their capital assets base can play a crucial role in mitigating the food insecurity of peri urban household. We suggests that intervention promoting food security of peri urban household need to expand their focus not just on agriculture food production, but also in building the capacity of household's social capital networks. Policies to assist households accumulate assets by building capacity at household and creating an enabling environment, need to be complemented by measures designed to protect them from food insecurity.

The study further recommends that food security interventions need to focus on peri-urban areas where majority of poor urban dwellers are located. Urban policy makers must recognize the contribution of the peri urban smallholder farmers in ameliorating food insecurity of peri urban dwellers. In addressing the complex issues of food insecurity and urban poverty, there is need for the urban authorities to facilitate enabling environments that foster the strengthening of household's livelihoods through promoting social capital and households' asset accumulation. Most importantly, there is need for recognizing and promoting social or community group driven urban agriculture initiatives as a major contributor of urban food security for the poor peri urban dwellers. This has a potential to positively contribute to better food security achievements for the peri urban affected households. This may be done through training and capacity building of local groups and organizations.

Funding

This work was entirely funded by MISTRA Urban Futures as part of the Kisumu Local Interaction Platform (KLIP) Activities for the conduct of the research and preparation of the article to co-produce knowledge. We declare that there is no conflict of interest.

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