



Bonding, bridging and linking social capital combinations for food access; A gendered case study exploring temporal differences in southern Malawi

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ABSTRACT

In 2018–2020, 82% of Malawian's were classed as moderately or severely food insecure. For decades, Malawian's have used their social capital as a coping mechanism to access food in times of need. Yet social capital has started to decline in other sub-Saharan African countries, questioning the usefulness of social capital to alleviate hunger. Food security status and a person's stock of social capital are also dependent on gender. Yet there is limited research that considers gender when exploring how social capital is used to access food. The study aimed to understand the link between social capital and food security, how this varies between men and women, and if social capital use to access food has changed over time. To improve the understanding of how social capital is used to improve food security, qualitative data collection was undertaken in three districts in the Southern Region of Malawi. Rapid rural appraisal methods, including focus group discussions, seasonal calendars and ranking exercises, were used to meet the aims of the study.

We found that social capital can be used to alleviate hunger during periods of food insecurity. However, a lack of resources, weather variability, key community group disintegration and a reduction in active NGOs has resulted in changes in social capital and it could not be used as frequently as in the past to access food. This highlighted the importance of considering bonding, bridging and linking social capital separately in research as they are interlinked. The study found men and women have different types of social capital, with women being most active in village savings and loans groups, which were the most important group to improve access to food. Meanwhile, men can utilise their social capital from outside of the village to access food, something women could not do due to their restricted mobility. The changes to social capital use for food access that were uncovered in this study, as well as gender difference, are noteworthy given the increase in food insecurity in Malawi, and globally.

1. Introduction

Currently, 28% of people worldwide are moderately or severely food insecure and this statistics has been increasing since 2014 (FAO, 2022). The increase in food insecurity is not due to the unavailability of food rather its inaccessibility. Although food may be available, households are finding it increasingly difficult to afford food or cannot physically access the markets in which food is traded. This phenomenon is worldwide, however the sub-Saharan Africa region is the most affected with 24.8% of the population being severely food insecure (FAO, 2022). Households in low-income countries are particularly vulnerable to food insecurity as they spend larger proportions of their incomes on food. A change in food prices has a large impact on their ability to access food,

and households must reduce their consumption of food or other essential spending. Many factors influence a household's ability to access food including environmental, social, economic and political issues (Keller et al., 2018; Abegaz, 2017; Bashir and Schilizzi, 2013), making it difficult to unpack the drivers of food inaccessibility and how to solve it. Although there is an increasing amount of research focused on food access, its high context specificity means it is currently not as well understood as food availability (Connolly-Boutin and Smit, 2016; Gibson, 2012).

Finding policy and market-based solutions to improve people's access to food requires a deeper, context specific understanding of food security. Households cope with food insecurity in a multitude of ways including selling assets, reducing food consumption and diversifying

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livelihoods. Another coping mechanism is to rely on their social capital. Social capital includes family, friends and a wider social network that can be called upon in times of crisis, to meet a mutual objective or to secure a livelihood (Woolcock, 1998; Halpern, 2005). Previous research has found social capital is associated with improvements in household food security in Africa and globally (Tibesigwa et al., 2016; Sseguya et al., 2018; Vervisch et al., 2013; Kaiser et al., 2019; Chriest and Niles, 2018). Low-income, resource-dependent households are particularly reliant on social capital as they have limited means to access food in other ways (Tibesigwa et al., 2016; Kaschula, 2011).

Social capital is multidimensional and includes cognitive, relational and structural dimensions. Structural social capital represents the embedded resources, such as cash, food or information, within relationships and is seen as the most useful dimension in international development (Seferiadis et al., 2015; Bebbington, 2009). Structural social capital can be unpacked into the following typologies: bonding, bridging and linking social capital. Relations between people who share a similar identity, background and culture, such as family and friends, can be described as bonding social capital (Szreter, 2002; Claridge, 2018). Meanwhile, bridging social capital is characterised by mutually beneficial relations. Individuals come together to meet a goal and collective action is required to meet the goal (Engbers et al., 2017). Bridging social capital can be between individuals with both homogeneous and heterogeneous characteristics, although power is usually equal and focuses on solidarity, group membership and social cohesion. Relationships between people with an unequal power dynamic can be described as linking social capital (Woolcock and Narayan, 2000). For example the relation between a non-governmental organisation (NGO) and community members would be described as linking social capital (Khalil et al., 2021; Claridge, 2018). The formal, more powerful, institutions provide resources, information and skills to people who may struggle to access them otherwise (Claridge, 2018; Jordan, 2015).

Social capital has been overlooked in food security research when compared to human, financial and physical capital due to a social capital food-security theoretical framework not existing (Rayamajhee and Bohara, 2019). The complexity and context specificity of both concepts makes research challenging, especially in the absence of a theoretical or conceptual framework. Yet, research that has been conducted suggests that, generally, high social capital is associated with lower vulnerability to shocks and crisis and better food security status (Woolcock and Narayan, 2000; Chriest and Niles, 2018; Sseguya et al., 2018; Dzanku, 2019). Social capital is particularly important for food security, and wider development outcomes, in low-income, resource-dependent communities where formal national institutions may be weak (Groo-taert, 1998; Davenport and Hassan, 2020). Market based approaches to food security and other development outcomes in such countries often exclude the inequalities that occur at the household and community level, such as gender inequality (Herrington and Mix, 2020). Social capital may provide a more inclusive approach to improving food security. The potential social capital has for improving household food security has led to calls to include social capital in food security development projects and policies (Pretty and Ward, 2001; Savioli and Patuelli, 2016; Kiboro, 2017). Prior to this occurring, more research is required to explore how social capital and food security may be related. There are numerous gaps in social capital-food security research, such as not accounting for spatial and temporal patterns, using a single social indicator and the limited inclusion of gender.

It is important for social capital to be unpacked into its typologies as bonding, bridging and linking social capital are associated with food security in different ways, and this can vary in different contexts. For example across Nigeria, bonding social capital was associated with better food security status while bridging social capital had no association (Lamidi, 2019). Meanwhile in rural areas in Kamuli District, Uganda the opposite was true, with bonding social capital and food security showing no association and bridging social capital being associated with higher food security (Sseguya et al., 2018). Similarly, a study

across 5 East and West African countries found no consensus in how the typologies of social capital are associated with food security (Frankenberger et al., 2016). Between and within the 5 countries, there were variations in how bonding, bridging and linking social capital were associated with food security. Despite such findings, there continues to be an over reliance on using a single indicator in social capital research which fails to grasp the concepts multidimensionality (Patulny and Svendsen, 2007; Frankenberger et al., 2016; Sseguya et al., 2018; Kansa et al., 2020). The way in which households use their social capital typologies to access food is context specific and requires research at a case study level to understand the intricacies of any association. Understanding households coping mechanisms and solutions to overcome food security is particularly important in the current period of worsening global food security.

1.1. Social capital-food security nexus and gender

Social capital research was ignited in the 1990's by Putnam's (1995) work on social capital decline in the USA. Yet, he was criticised for not accounting for various structural factors that influence a person's stock of social capital, such as gender (Martikke, 2017). Gender differences exist in the type and amount of social capital available as well as the food security status of a person. Men and women have different types and amounts of social capital both in developed and developing countries (Katungi et al., 2008). Generally, women have more bonding social capital than men, however, women have smaller, geographically restrained social networks (Katungi et al., 2008; Addis and Joxhe, 2017). Understanding the gender differences in the types and amount of social capital is important as social capital is used to access certain resources and spaces. In India, a higher social capital score (measured using a single indicator) was a significant determinate in women's empowerment (Ikhar et al., 2022). Empowered women have children with good child health outcomes (Heaton, 2015), reduced likelihood of experiencing gender-based violence (Keith et al., 2022) and better food and nutrition security (Lufuke et al., 2022). Thus, gendered social capital research may be important to wider improvements in the empowerment of women and sustainable development.

Gender inequality in social capital can exacerbate women's vulnerability to food security, becoming a vicious circle. Women's inability to access resources such as seeds, extension services and farming inputs means women are more food insecure than men (FAO, 2011; Kassie et al., 2015; El-Rhomri and Domínguez-Serrano, 2019; Prügl and Joshi, 2021). This access inequality is also seen in social capital. For example, women are not always allowed to join male dominated groups in Uganda, such as farmer cooperatives (Katungi et al., 2008). Farmer cooperatives improve food security by providing access to resources or information. Therefore, women are not only excluded from such social groups, which limits their social capital, but are also excluded from any benefits the groups may have on household food security. Although social capital and food security research consider gender when researched separately, the food security-social capital nexus is lacking a gender lens, with few studies explicitly exploring gender differences (Naughton et al., 2017; Anbacha and Kjosavik, 2018; Kairiza et al., 2021).

1.2. Temporal patterns in social capital and food security

Temporal aspects of food insecurity can exacerbate gendered disparities in food access and are often missing when exploring how social capital is used to access food. Food security is often seasonal in low-income countries that are reliant on rain fed agriculture. In the months leading up to harvest, food availability and access is low, resulting in people reducing their food consumption, in particular women (Mason et al., 2015; El-Rhomri and Domínguez-Serrano, 2019). Food security has also changed over longer periods of time. From the 1990's until 2010's, food security has gradually improved across the

world. However, since 2014, the percentage of severely food insecure people has started to increase in all regions except Europe and North America (FAO, 2018). As women are disproportionately impacted by food insecurity (Patel, 2012), they have been most vulnerable to the recent increases in food insecurity (Anugwa et al., 2022).

Whilst the temporal changes in food security are well researched and reported, changes in social capital are not. Social capital has to be maintained through face-to-face interaction and adapts over time, leading to different combinations of bonding, bridging and linking social capital across different time periods (Adger, 2003; Vervisch et al., 2013). Social capital can be used to access food; however, if food security follows a seasonal pattern, it is likely the social capital used to access food will also vary over time as the resources embedded within ties fluctuate with time (Byg and Herslund, 2016). Research that explores the temporal aspect of social capital is often in the context of a disasters such as a floods (Rotberg, 2010; Hawkins and Maurer, 2010; Jordan, 2015) or drought (Washington-Ottombre and Pijanowski, 2013; Nyahunda and Tirivangasi, 2022). Little is known about how social capital is used to access food at different times of the season, despite food security having strong seasonal trends which are driven by livelihoods, weather and the agricultural season.

Social capital in low-income countries also changes over longer time periods due to various economic, social and environmental changes. It has been documented that social capital is declining in sub-Saharan Africa due to challenging climatic conditions, changing livelihoods and economic development (Motsholapheko et al., 2011; Omolo and Mafongoya, 2019; Kansanga et al., 2020; Kairiza et al., 2021). In Malawi, improved access to urban areas reduced the use of bonding social capital to access food in a community (McNamara, 2019). If social capital is declining over long periods of time, and other coping mechanisms remain limited, it calls into question the potential for rural communities in low-income countries to cope with food insecurity. Yet, outside the disaster context, there is limited research on the long-term changes of how social capital is used to access food.

1.3. Spatial patterns in social capital and food security

Spatial patterns also influence the social capital-food security nexus. Interactions between people, institutions and groups are required to build up, use and maintain social capital (Erlström et al., 2022). Face-to-face interactions are a particularly important way of developing social capital (Putnam, 2000), therefore, such interactions often occur in local and spatially close environments (Lo and Cheung, 2016). In low-income and resource-dependent countries this is even more important, due to limited access to communication technologies and transport (Pretty, 2003; Pretty et al., 2020). The spatial aspect of social capital is also influenced by gender. In countries where gender norms restrict women's mobility, they may struggle to form and maintain their social capital, thus resulting in smaller social networks than men (Erlström et al., 2022).

There is little social capital research that accounts for spatial variations (Craig et al., 2022; Kyne and Aldrich, 2019), especially beyond a simple urban-rural comparison (Baycan and Öner, 2022; Eriksson et al., 2021). Yet it is likely that within countries, rural areas will have different types and amounts of social capital. Within bonding, bridging and linking social capital, there are resources embedded within the ties which will vary spatially (Foster et al., 2019). In the case of food, food access and availability is not uniform within countries (Dzanku, 2019). Communities that are resource dependent and rely on rainfed agriculture will be impacted by local weather conditions, extreme weather events and various other shocks that are spatial in nature. An exploration of how the social capital-food security nexus may differ in spatially spread-out rural communities will provide a deeper insight into spatial social capital research.

Social capital is a useful coping mechanism for improving food security, however additional research is required to understand the social

capital-food security nexus in more depth. The food security-social capital nexus is likely to be influenced by gender and temporal differences, yet research incorporating all four concepts has not been undertaken to the best of the authors knowledge. This is a limitation to social capital-food security nexus research. Over half of the climate change induced hunger that has been predicted in the future is likely to occur in sub-Saharan Africa (Sulser et al., 2021). Meanwhile, food insecurity and climate change impact women more than men, so understanding women's experiences in how they use social capital for food access is a key gap in the literature. Research that is focused on low-income countries is lacking compared to high-income countries, and given social capital context specificity, it is likely there are large differences in how social capital and food security are related (Vervisch et al., 2013; Agampodi et al., 2015). These research gaps are, in part, due to the complexity and context specificity of the food security-social capital nexus and an extra layer of complexity is added when acknowledging gender and temporal differences.

Considering the research gaps that have been discussed in the social capital-food security nexus, this study addresses the following research gaps: using a single social capital indicator, limited research in a low-income country setting, not explicitly including gender and lacking a geographical lens that accounts for spatial and temporal variability. This study will address the gaps with three aims. Firstly, to understand how food security varies by gender and across the seasonal calendar. Secondly, the study aims to understand how the social capital typologies are used to access food and how this varies between men and women as well as across the seasonal calendar and over the past 5–10 years. Finally, we explore how bonding, bridging and linking social capital influence one another over time and how this relates to food security. By providing an in-depth qualitative understanding of how social capital is used as a coping mechanism, whilst accounting for gender, this study presents an insight into how rural societies are currently navigating the many challenges they are facing.

2. Material and methods

2.1. Study site

Malawi is a low-income country in southern Africa and 82% of the country's population are rural inhabitants (World Bank, 2022). Over 70% of the population lives below the international poverty line and there have been only minor improvements in this statistic over the past 2 decades. Agriculture is the main economic activity in Malawi with 64% being employed in the sector, of which most are smallholder farmers (Government of Malawi, 2018). When considering both main and additional economic activities, 85% of households engage in agricultural labour activities (NSO, 2020). The main crop that is grown in Malawi is maize, however sweet potato, cassava, pigeon peas, tobacco and tea are also grown. The agricultural sector's focus on growing maize has resulted in minimal diversification of the sector (Kambauwa et al., 2015). Smallholder farmers are reliant on their crop production for both food and income, however, there is an overreliance on maize as the staple crop. Rainfed agriculture is the most common type of farming (accounting for 90%) as irrigation is very limited (Gumma et al., 2019). A lack of agricultural diversity and irrigation has resulted in an agricultural sector that is highly vulnerable to changes in weather, particularly rainfall.

Food insecurity is widespread in Malawi. In 2020, 82% of the population were moderately or severely food insecure (FAO, 2021). Although there were improvements in the prevalence of undernourishment in the 1990s, progress stagnated, and food security is now worsening in Malawi. Although smallholder farmers grow their own food, 85% of Malawians are net buyers of food (Benfica, 2014). The price of maize is volatile in Malawi, which makes it difficult for the many households living in poverty to buy food. Prior to harvest, a lean period occurs annually between November and March (FEWSNET, 2022) which

is when food prices are highest, and households struggle to access food.

This study focuses on three districts in the Southern Region of Malawi: Phalombe, Zomba and Machinga (Fig. 1). The districts have a high percentage of rural inhabitants, high levels of food insecurity and high dependency on agriculture for a livelihood (Table 1). The study sites have varying weather conditions and different proximity to Zomba, which is the nearest urban city for each of the communities. Poor weather conditions were given as a cause for food shortages in 2019–20 by 26%, 45% and 40% of households in Machinga, Phalombe and Zomba, respectively (NSO, 2020).

Historically, social capital, in particular bonding social capital, has been high in Malawi (Myroniuk and Anglewicz, 2015). Supporting family members, going to markets and participating in community meetings are a large part of Malawian culture which promotes strong social networks (Forster, 1994; Myroniuk and Anglewicz, 2015). Although there are limited studies on social capital in Malawi, research has suggested differences in social capital between communities (OPM and FAO, 2014; Brown et al., 2018). For example, a community which was easy to access via road had high bonding and linking social capital, meanwhile the remote community had limited amounts of bonding and linking social capital (OPM and FAO, 2014).

Strong gender norms exist in Malawi with men and women having separate roles and responsibilities (Kakota et al., 2011). Both matrilineal and patrilineal lineage systems occur in Malawi, however, the former is most dominant in the Southern Region where this study is based (Berge et al., 2014). Matrilineal marriage practices mean women inherit land, and although this gives them some influence in land and agricultural based decision making, it is the man (at the household level) who makes final decisions (Anderson et al., 2018). Due to cultural norms, women are less mobile and are constrained within their communities whilst men are more mobile hence have connections to wider networks beyond their communities. (El-Rhomri and Domínguez-Serrano, 2019). This is reflected in spatial variations of the sex ratio in Malawi. The average sex ratio was 94.2 in 2018 suggesting there are generally more women than men (GoM, 2018). Yet in urban areas such as Blantyre, Zomba and

Table 1

Characteristics of the study site districts. Population data from Malawi Census (2018)(GoM, 2018). Food shortage and agricultural engagement data from the Fifth Malawian Integrated Household Survey (NSO, 2020). Note: Zomba City and Zomba are separated in census and IHS5 data to avoid skewing of statistics.

	Population (2018)	Rural population 2018 (%)	Experience of food shortages 2019–2020 (%)	Households engaged in agriculture 2019–2020
Machinga	735,438	96.6	86.1	93
Phalombe	429,450	98.5	81.7	99
Zomba (not inc. Zomba City)	746,724	100	81.5	93.9

Lilongwe there are more men as the sex ratio was 109.6, 106.9 and 110.8, respectively. This means women may struggle to access information or resources that are only available outside of their village. The severity and seasonality of food insecurity, alongside strong gender norms and historically high social capital makes Malawi a good case study to address the study’s research aims.

2.2. Methodology

Rural rapid appraisal (RRA) methods, including focus group discussions (FGD), seasonal calendars and a ranking exercise, were adopted to answer the research questions in this study. FGD are a useful qualitative method to understand participants views on issues that have been under researched or are poorly understood (Silverman, 2017). When discussing topics that are sensitive, FGD can help facilitate conversations as the group dynamic encourages reserved participants to speak more freely than in one-to-one interviews. Finally, FGD allow researchers to learn about the views of different groups in society (Flowerdew and Martin, 2013). Given the lack of social capital and food security research in Malawi, the sensitive nature of food insecurity and the aim to

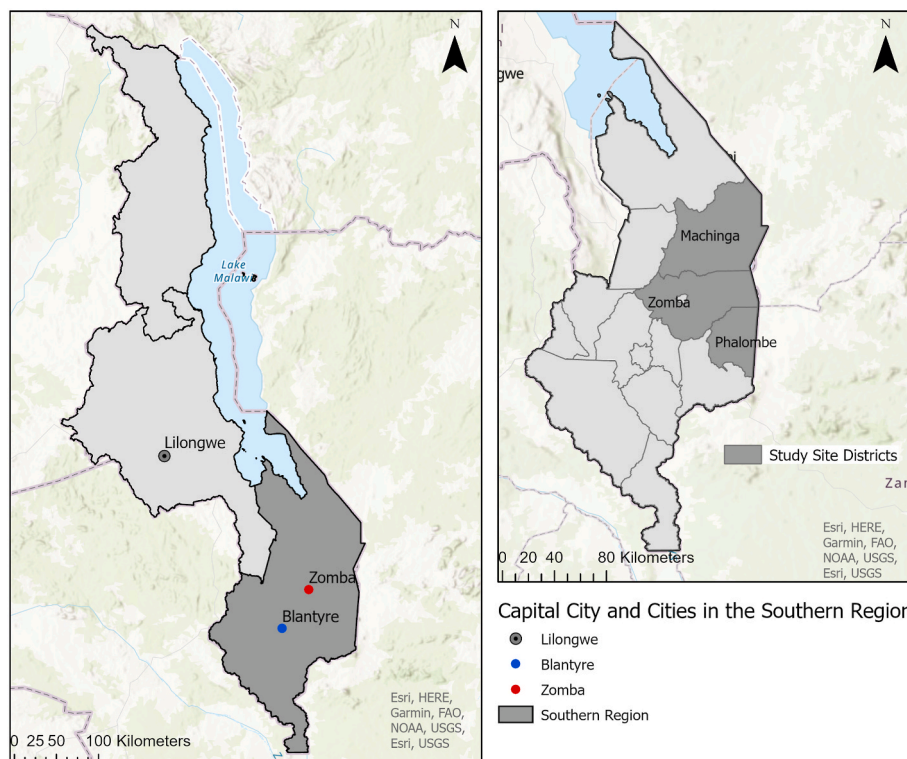


Fig. 1. Map of the study site.

compare gender differences, FGD were chosen to be the most appropriate qualitative method. Food security is a household and community issue and FGD deepened the understanding of how food security and social capital at the two levels can influence one another.

RRA are a widely used method that produces data but also has a key learning component for the participants. Developed in the 1970s to avoid selection bias and costly surveys, RRA involves local people in the research and development process (Chambers, 1991; Binns et al., 1997). RRA empowers the poorest in the community and ensures their voices are heard by including them in the RRA methods (Chambers, 1994a). RRA overlaps with participatory rural appraisal (PRA) methods, with the latter being developed in the 1980s as a follow on of RRA (Chambers, 1994a). Data collection and data analysis in RRA are executed by outsiders who learn by extracting information from local people (Chambers, 1994a, 1994b). Meanwhile, in PRA information is owned by local people who are involved in the analysis process (Chambers, 1994b).

Both RRA and PRA have the same principle, where the focus of the research is learning from local knowledge that is drawn out through participatory face-to-face methods. RRA and PRA have been used in previous research exploring food security (Häsler et al., 2019), links between gender and environment (Quigley et al., 2017) and environmental impact assessments (Sandham et al., 2019). Although visual methods were used in this study, which are aligned more closely with PRA, data collection and analysis aligns with RRA philosophies as information was not owned or analysed by participants (Chambers, 1994b; Binns et al., 1997).

To compliment the FGD, two additional RRA methods were used: seasonal calendars and ranking exercises. Including multiple RRA methods allows for triangulation, but are also powerful and practical in how they influence the conversation and thought process of participants (Scrimshaw and Gleason, 1992). The seasonal calendars were produced at the start of the FGD where participants were asked to give their perspective on the weather, agricultural season, food availability, income sources, price of food and food self-sufficiency from January to December of the previous year. The seasonal calendars were referred back to for the remainder of the FGD, acting as stimulus material (Peek and Fothergill, 2009). The FGD discussions included key topics including: food security, coping mechanisms for food insecurity, relations with family and friends, community groups and involvement with NGOs or government. Within these areas, differences between gender and changes in time were also spoken about. When discussing food security, participants were asked questions from the Food Insecurity Experience Scale (FIES) survey, which focusses on food access (Saint Ville et al., 2019). The FIES characterises people as food secure, moderately food insecure or severely food insecure. This was asked to gauge participants level of food (in)security. A questionnaire guide was used as a prompt, but facilitators allowed conversations to diverge from the guide as long as they were relevant to the study aims. Finally, the ranking exercise was used to conclude the FGD. Throughout the FGD, participants views developed and changed as each participant in the group shared their, potentially contrasting, views. The ranking exercise proved a good exercise to understand the participants final view of the usefulness of social capital for alleviating food insecurity at different points of the seasonal calendar.

2.3. Data collection

Purposeful sampling was used to select the villages and participants. Phalombe, Zomba and Machinga districts were selected as previous research has found they have different combinations of bonding, bridging and linking social capital (Craig et al., 2022). Regarding food security, Machinga, Phalombe, Zomba are among the 4 districts across Malawi with the highest percentage of households that experienced food shortages in 2019–2020 (NSO, 2020), suggesting high levels of food insecurity (Table 1). Communities within the districts were selected based on travel time to Zomba city centre, as the distance to an urban

centre can influence the social capital combinations that are available to a household. The public bus to Zomba took 2.5 h from the community in Machinga, 2 h from the Phalombe community and 40 min for the community in Zomba.

Specific villages were identified during a scoping trip to ensure they had a public, sheltered and well-ventilated space to conduct the FGD. FGD should be conducted in socially neutral spaces, rather than people's homes and due to data collection occurring during the wet season, these spaces needed roofing. Areas also needed to be well-ventilated to reduce the risk of COVID-19 transmission. On the scoping trip, permission was sought from the village Chief who acts as a gatekeeper in rural African settings (Tindana et al., 2006). All Chiefs gave permission, and they were asked to select participants. It was made clear that participants must be: adults, live in a rural household and engaged in agriculture as their main economic activity. Participants were therefore subsistence farmers who relied on their own crops to make a livelihood, but also engaged in additional income generating activities such as casual labour. By explaining to the Chief the importance and aims of the study as well as specific participants needed, selection bias was reduced (Maunganidze, 2019).

FGDs with 5 participants were conducted as they were small enough to ensure everyone could speak freely, maintains order and avoids having dominant speaker or passive spectators (Peek and Fothergill, 2009). FGD were segmented by gender and village participation level, resulting in 4 FGD in each village. In total there were 60 participants with an even gender balance. Gender beliefs and norms mean both the participants and facilitators behaviour and trust are impacted by gender (Kristoffersson et al., 2016). Previous research found that when given the choice about the gender of the facilitator, women preferred female facilitators, although men had no preference (Yager et al., 2013). To ensure everyone involved felt comfortable, the facilitator was the same gender as the participants in the FGD. The FGD duration ranged from 80 to 120 min and participants were given a loaf of bread and a drink as a refreshment at the end of the discussions.

FGD were not audio or video recorded for practical and validity reasons. Audio recording may influence what people say due to participants being aware they are being recorded, especially as some areas of discussion were sensitive and around the topic of illegal practices (Rutakumwa et al., 2020). As the FGD were conducted outside, it would have been difficult to obtain clear audio recordings, especially in the rainy season as many roofs were metal which amplified the noise (Flowerdew and Martin, 2013). Instead, a notetaker took detailed notes during the FGD and the translator translated to the lead researcher who took notes. A debrief and comparison of notes occurred after the FGD to ensure nothing was missed. Although the FGD were not audio recorded, this is not a limitation to this study as direct notetaking can have the same level of detail and data quality as verbatim transcription (Rutakumwa et al., 2020). Data collection occurred in January and February 2022 and ethics was approved from the University of Southampton and Malawi National Commission of Science and Technology.

2.4. Data analysis

Thematic analysis was used to analyse the data, which is a common analytical method for FGD data (Silverman, 2017). Although content analysis could have been used, it is most suitable for existing data that may not be fully aligned to the research question (Robson and McCartan, 2016). As data has been collected specifically for this research, thematic analysis will provide a more in-depth analysis.

There are two steps to thematic analysis: coding and narrative. A list of codes was developed using both an inductive and deductive approach (Terry et al., 2017). The literature review and research questions provided some key codes; however, the FGD also created new knowledge (Flowerdew and Martin, 2013). The knowledge that arises from the FGD adds and redefines the initial codes generated from the literature review and research questions. Once the codes have been identified, they are

grouped into themes (Robson and McCartan, 2016), again using data and theory driven approaches. Themes were identified based on the repetition of codes, similarities and differences between participants and theory.

NVivo, a computer assisted qualitative data analysis software, was used to aid analysis. The lead researcher was responsible for the coding, however, there was cross referencing with an experienced Malawian researcher. This ensured that the codes and themes that were generated were valid and improved the quality of the data analysis (Robson and McCartan, 2016; Terry et al., 2017). Narratives were taken from the scripts to illustrate the key findings (Mbonye et al., 2013). As there was no transcription, the narratives are not quotes but excerpts of the scripts.

3. Results and discussion

The final themes that were generated from the analysis were: barriers to social capital; temporal changes; climate, weather and the environment; gender differences; off-farm income generating activities; social capital and food (in)security. This section is divided into 4 key subsections: food security, social capital utilisation to access food, gender differences in how social capital is used for accessing food and temporal variations in social capital and how that relates to food access.

3.1. Food security

All three communities were moderately or severely food insecure. The community in Phalombe experienced severe food insecurity and spent at least one whole day without food at some point during the lean season, which they said happened every year. Phalombe had the worst food security out of all the communities with one participant in Phalombe saying “we can go to sleep without food. Some days it’s not always a whole day and we give juice or cassava to fill the children’s bellies.” The communities in Zomba and Machinga experienced moderate food insecurity, with communities in Zomba limiting meals to one meal a day in the lean period with a participant explaining “we have months where we only eat in the evening as we want energy the next morning for farming and school.” Machinga meanwhile limited the variation of food they eat and the number of foods.

The community’s perceptions of their accessibility to food changed over the course of the season as seen in Table 2. Red indicates low food accessibility, amber medium food accessibility and green high food accessibility. All the communities had low access to food in February and March, whilst June was the only month where all 3 communities reported high food access. By September, all but two of the FGD found it harder to access food, with low or medium food accessibility. Moderate and severe food insecurity is widespread in Malawi with over 80% experiencing it in 2019–20 (FAO, 2022). Food insecurity is particularly problematic in the lean period which can run from November to March (FEWS, 2022), however, in half of the FGD the lean period appears to begin as early as September or October.

In all the communities, the main economic activity was farming so participants relied on their own crop production for food and income. According to 2016-17 survey data, maize and pigeon peas are the most commonly grown crops in the three districts, with some households also growing groundnuts in Machinga and Zomba (NSO, 2017). Despite farming being the main economic activity, participants explained that their food self-sufficiency only lasted between 4 and 9 months, suggesting participants may need to buy or borrow food for 8-3 months of the year (Fig. 2). All FGD reported that they were self-sufficient from May through to July, after the harvest period, whilst no FGD were self-sufficient in January and February. The average length of time of food self-sufficiency has been reported as 7 months (Yamadi, 2008), however, the average based on the 12 FGD was 5.9 months although large variations existed (Fig. 2). There were also gender differences in the perception of food accessibility and self-sufficiency. The male FGD reported on average 5 months of high access to food and 6.8 months of self-sufficiency, while the female FGD reported on average 3.3 months of high access to food and 5 months of self-sufficiency.

This would suggest women are more vulnerable to food insecurity and both male and female participants agreed that women are impacted more by food insecurity. It is well reported that women and girls are disproportionately impacted by food insecurity (Patel, 2012; FAO, 2015). This is caused by unequal access to farming inputs such as credit, seeds, land and extension services (Kerr, 2005; FAO, 2011). Although participants did not mention unequal access to farming inputs, they did mention the inequality in movements with one woman in Machinga

Table 2
Food accessibility across the season as perceived by the 12 focus groups. Red = low food accessibility. Amber = medium food accessibility. Green = high food accessibility.

		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Machinga	Women	Red	Red	Red	Green	Green	Green	Green	Green	Amber	Amber	Amber	Amber
	Men	Red	Red	Red	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber
Zomba	Women	Red	Red	Red	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber
	Men	Red	Red	Red	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber
Phalombe	Women	Red	Red	Red	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber
	Men	Amber	Red	Red	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber	Amber

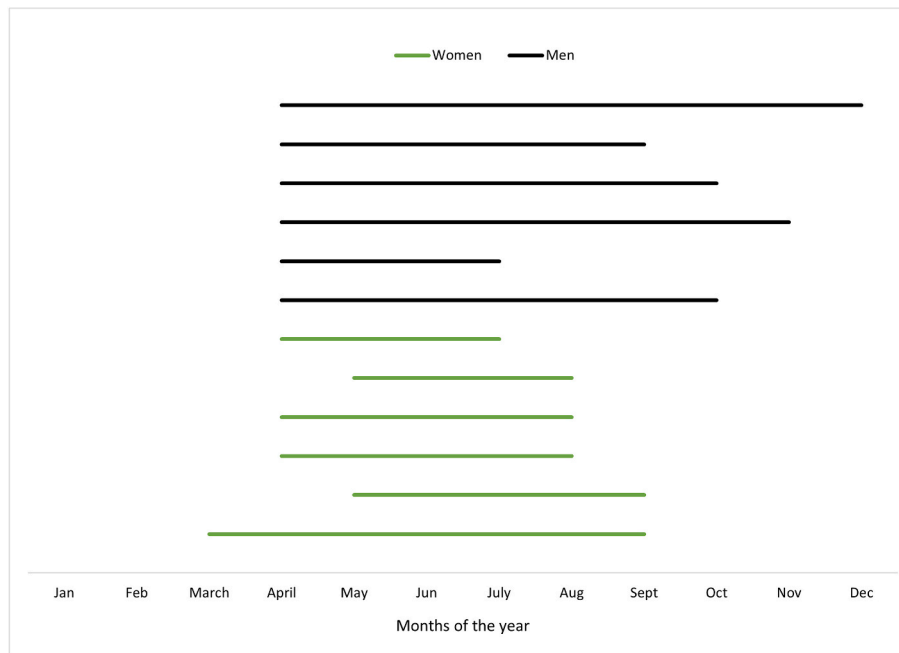


Fig. 2. Months of the year that participants reported being self-sufficiency regarding food. Green indicates the female FGD and black the male FGD. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

sharing that “women and children are most affected as men can eat outside [the village, at trading centres] and pretend they have not eaten meanwhile those at home have to figure out what they can eat”. Men can visit areas outside of their communities where they can access food through their bonding social capital networks, meanwhile women stay at home or in the confines of the village where there is no way for them to access food externally. It is likely the type of marriage practice would influence women’s mobility and may vary between matrilineal and patrilineal systems.

Economic, environmental, political and social reasons were given for the cause of food insecurity in the three communities. The most common reasons were small landholding sizes, lack of fertiliser, erratic weather and having to sell maize for money to purchase other items. In Zomba, accessing fertiliser was the biggest issue regarding food security as without fertiliser application crop yields were very low. One female participant explained that they “may have a fertiliser coupon but no money to buy the fertiliser with, even with the coupon. It is difficult to buy fertiliser now. Sometimes you have to [give a] bribe to buy fertiliser.” Fertiliser in Malawi is becoming increasingly expensive with prices doubling between August 2020 and April 2022 meaning farmers are struggling to purchase the fertiliser (FEWSNET, 2022). There has also been implementation issues in the recent changes to the fertiliser subsidy programme (Kateta, 2022).

Meanwhile, changes in rainfall patterns were the biggest reasons given for food insecurity in Phalombe with one male participant explaining that “when the rain comes its disastrous, it comes like a war. When the rain falls it takes a long time to rain again. We used to have a lot of good rains. Now the rain starts late and doesn’t fall like it used to.” Phalombe’s positioning means the district is susceptible to dry spells and flooding (Mtilatila et al., 2020). Phalombe’s challenging growing conditions were evident during fieldwork with dry cracked soil and maize that was approximately 0.5 m tall. Meanwhile in Machinga, which has more optimal growing conditions and better food access, there was moist soil and maize that was approximately 2 m tall. Participants in Machinga were aware they had more optimal conditions with one female participant stating that “this community has an advantage due to good weather and soil which is good for the crops.”

3.2. Social capital and food security

In all FGD, participants explained that they could rely on their bonding social capital, in this case family and friends, when they did not have enough food. However, there are limits to how frequently a person can ask for assistance from a family member or friends. Similarly, people will ask only immediate family members and close friends, rather than distant relatives and acquaintances. Bonding social capital directly assists with food insecurity, with family and friends giving out food or cash, or inviting the food insecure person to join them for a meal. Long term, good friends where mutual support has occurred before will provide cash or food, but weaker friendships may not provide help during periods of food insecurity. That said, even strong friendship may provide conditional assistance and food is sometimes given in exchange for *ganyu* (casual labour) or as a loan as explained by a participant in Machinga who shared that “yes, they will help you but they will loan with interest, they will not give for free. Before people would always help each other and loans with interest would not happen before.”

Bonding social capital is seen as a lifeline for the rural poor (Groo-taert, 1998; Tibesigwa et al., 2016) and the sharing of food can help with food deficits (Patel, 2012). Yet the findings suggest that although bonding social capital is used and available to access food, there are limits and conditions that exist. This echoes findings from Margolies et al. (2017) who found the sharing networks in Malawi were smaller and tighter than expected. The limited bonding social capital, with conditional food or cash transfers may be caused if the communities have experienced a shock or lack of economic capacity (Jordan, 2015; Wossen et al., 2016). Although the communities had not experienced a climate or economic shock prior to fieldwork, the communities were experiencing challenges regarding their livelihoods and the economic capacity to help one another was limited. As previously discussed, poor weather, small landholding sizes and poor soil quality coupled with expensive fertiliser were putting pressure on participants ability to make a livelihood. If bonding social capital is limited during challenging situations, and food insecurity may be at its highest, bonding social capital’s ability to be a “lifeline” is also limited.

Bridging social capital, which was explored through group membership, varied in the three communities. In Machinga, 11 different

types of bridging social capital groups were mentioned, meanwhile Phalombe and Zomba had only 4 and 5 respectively. In some cases, there were multiple groups of the same type. For example, in Zomba there was more than 1 village savings and loans association (VSLA.) All three communities had at least one VSLA and youth group, with the former being the most useful regarding food access. The VSLA had been used to obtain loans, invest in farming and non-farming businesses and access emergency loans, with both members and non-members appreciating the benefits the group provides. A participant explained the benefits of the VSLA as “[with the village bank] money is kept amongst ourselves and there is an internal circulation so you can borrow money more easily. When you share money you get interest with the original that is put in to the bank. In an emergency you can get a loan.” The VSLA provides both direct and indirect improvements in food security. For example, the emergency loan can be taken out to buy food, meanwhile normal loans can be used to invest in fertiliser or other inputs that improve crop yield, and therefore food security.

Other groups could also be used to improve food security. The youth group assisted in providing food for the elderly by growing and distributing maize on their behalf in Machinga. Meanwhile in Phalombe, a food security group existed where each member stores 5 kg of maize together which is only accessible during the lean season. Finally, the women’s group in Zomba come together with food and cook for ill members of the group. Most participants agreed the VSLA was the most useful group regarding food security, however, not everyone was a member: “I was a member, but I dropped out a long time ago. Scarcity of money meant I had to quit.”

To join the VSLA, members must deposit an amount of money at a regular frequency. Participants who do not have the extra money to deposit money in the VSLA are therefore unable to join. Although the VSLA can improve food security both directly and indirectly, the most vulnerable are unable to benefit from the group. Similar finding were made in South Africa, where bridging social capital only increased food consumption amongst the least vulnerable (Tibesigwa et al., 2016). Bridging social capital may only be useful for food access for those with the resources to join, questioning its usefulness for the poorest and most vulnerable to food insecurity.

Linking social capital, where NGO or government activity and assistance were explored, appeared to be limited in all three communities with a participant in Zomba explaining “the government bring food for the needy. It’s only 2 people per village, very few benefit from government food aid.” Although NGO projects and aid had existed in the communities, it was no longer present. Government assistance through the social cash transfers programme (SCTP) and fertiliser programme impacted food security but was limited to the most vulnerable in the communities. For example, the SCTP is given to most vulnerable 10% which is based on households that are ultra-poor and labour constrained (GoM, 2022).

As linking social capital was limited in the communities it was not clear which channels the aid or programmes worked through to improve food security, however, participants provided information on previous aid they had received and projects they were beneficiaries of. The fertiliser programme indirectly improved food security by improving land productivity and therefore increasing crop yields, by providing farmers with faming inputs. However, some participants had not received the inputs on time for the planting season in October–December. Some participants were still waiting to receive fertiliser in late January, highlighting that linking social capital may not always be reliable. Meanwhile the SCTP ensured the most vulnerable were able to buy things they needed such as food. Some of the NGO projects had previously paid people to work on conservation or dam building projects, which participants explained helped with buying food. However, the projects were now unpaid, and although they improved the environment, participants did not see how it benefited their food security and that the NGOs may as well not be there.

Upon ranking their social capital and economic activities in order of

usefulness in accessing food, either VSLA or ganyu were ranked first in all FGD (see example in Table 3). NGOs, government and youth groups were ranked in the bottom half, with family, friends and business ranking in the middle. There were variations between and within communities, but there was a general consensus that VSLA were the most useful form of social capital during periods of food insecurity. Family and friends were usually ranked equally or in succession of one another. Finally, NGOs, government and youth groups were last, with some participants saying they would not even rank them as they are not helpful in accessing food in any way.

The ranking of the social capital typologies highlights, not only the importance for breaking social capital into its different typologies, but that the bonding, bridging and linking social capital have different implications for food security. VSLA and youth groups are both a type of bridging social capital, yet one is deemed most useful in food access and the other not at all useful. VSLA has resources embedded within the group that can be used to access food. Meanwhile the youth groups, for the most part, share information which is a harder resource for people to then transfer into food. It also highlights that whilst a community may have vast numbers of groups, which was the case in Machinga, it does not mean they are useful in improving food security as the group does not improve a person’s ability to access food.

3.3. Gender implications in social capital and food security

There are differences in the social capital that is available to men and women and how it is used to improve their food security status. Men can utilise their bonding social capital outside of their communities to access food with one man in Phalombe saying “women and children are most impacted by food insecurity as men can go out and socialise where he is able to eat.”

Men meet friends at trading centres or in the street where they eat with each other. Women do not leave the communities and have a smaller and less spatially spread-out bonding social capital network to call upon, compared to men. Men and women’s food sharing practises also showed differences in Machinga and Phalombe. Whilst men felt they can share food or rely on family to help in periods of food insecurity, women were more reluctant to share or felt they cannot rely on their family. In Machinga, one male participant explained that “there are big differences now. Now, you are mindful of you and your children-you think of yourself. We used to work as a community but the communal aspect is waning. The women we marry are the reason why. When you suggest we share food, they said no.”

Men’s ability to freely move around in areas outside of their community has been documented in Tanzania, where men would share meals with their friends on the street (Mason et al., 2017). As previously discussed, women’s immobility restricts their ability to access inputs to improve farm productivity. However, limits on the mobility of women also restricts their bonding social capital network which could be used to access food. Women are more likely to have bonding ties with other

Table 3
Ranking of how useful different social capital and economic activities are for improving food security. Machinga active women FGD.

Rank	Economic activities and social capital
1st	Village savings and loans group Ganyu Family Business Friends NGO
7th	Government

women due to cultural norms and previous research has found women share food with one another (McNamara, 2019; Nyahunda and Tirivangasi, 2022). Yet, from the FGD in Machinga and Phalombe, women do not appear to share food as much as men with one woman stating she “cannot rely on family. Ganyu is hard to find, food is not available so your relatives will say they have nothing to give.” Meanwhile a man in Phalombe explained that “yes [we can rely on family]. Some [family members] but not all. Not everyone will help. They may have the thing you are asking for but they will not give. The relative may also be in need.” The male FGD in Phalombe and Machinga said they could rely on their family and friends, although to a lesser extent than in the past, meanwhile the women were reluctant to say they could rely on their bonding social capital to access food.

This is an interesting finding as bonding social capital has been associated as the social capital typology for women, whilst bridging and linking social capital is associated with men (Tippens, 2020). Our findings have shown women are more vulnerable to food insecurity and perceive the periods of self-sufficiency and high food accessibility to be shorter than men. It may be that women have reduced the amount of food they share with other women as they have a different perception of the household’s food security status compared to men. This is noteworthy, as it would be expected that in the matrilineal system, women would have a tight bonding social capital network that they have developed from a young age (Kerr, 2005; Gundewar and Chin, 2020).

Bridging social capital is also gendered, with some community groups being gendered as it fits with the focus of the group. For example, the women’s group and male champions group are gendered by nature. Other groups are gendered due to how they are perceived by the community. The VSLA are mainly formed by women, who go to the meetings and make deposits and withdrawals in their name. Men may instruct their wives to join a VSLA, but they do not join themselves or become involved in group decision making. Participants explained that “the bank is mainly for women. Men will use their wives and use the village bank that way. Most of the village bank groups are women, as women are from the community and are more trustworthy. Men are not from the village so may be crooks and run off without paying back. The women’s village banks usually last longer than the men’s village banks.” A lack of trust in men, means they are prohibited to join the VSLA. There have been instances where men have withdrawn money and then left the community to return to their own community without paying the loans.

This is reflective of southern Malawi’s matrilineal and uxrilocal marriage practises and the limited mobility of women. As men move into their wife’s community, it is the woman who has loyalties and built trust with other residents in the community. Unlike the men, women would not have anywhere to go to if they decided to steal money from the VSLA so are deemed more trustworthy. This is the opposite to northern Malawi, where patrilineal marriage systems exist and men stay in the same community for their whole life, thus building up trust and abiding by social norms (Kerr, 2005). In northern Malawi, VSLA were more likely to be sustainable if men were members (Munthali et al., 2022). The cultural context, in particular marriage practises, influence gender norms which are incredibly important to consider when considering bridging social capital impact on food security. For example in Senegal, it is culturally unacceptable for women to join groups (Patnaik, 2021), yet in Cameroon women are more likely to be in savings groups than men (Brown and Sonwa, 2018).

VSLA are incredibly useful in improving food security, however some are excluded from the group due to a lack of financial capital. Female headed households explained “we’re not members as economic income is not okay. We don’t have husbands and businesses to pay back [the loans]. We would definitely join [the VSLA] if we could—we’ve seen people put roofing on their homes and pay school fees”.

Although men do not join, their household will benefit from the VSLA if their wife is a member. Men and women who are not married therefore struggle to join and benefit from the VSLA. It has been reported that female headed households have poorer nutrition than male headed

households (Zingwe et al., 2021), so would benefit from joining the VSLA, yet are unable to. Again, the most vulnerable are priced out of joining a group that would improve their vulnerability to food insecurity.

Community groups can have a gender bias as women may not have the time to join due to their double day burden of balancing domestic and farming responsibilities (Klasen et al., 2011; Das, 2014). When asked if time was a barrier to joining the VSLA, the women said it was not, however some men said the meetings occurred when they are out at work. The women in the FGD have both domestic and farming responsibilities, but perhaps the double day burden can be easily overcome if the group accounts for women responsibilities and actively works around them.

Linking social capital did not appear to have a gender bias; however, the limited NGO and government activity in the communities makes it hard to explore whether there are gender differences. In the community in Zomba, the village head was a woman who may impact how external organisations interact with the community. Previous research in matrilineal areas of Malawi found men interact more with NGO staff and extension officers (Anderson et al., 2018). Although this does not seem to be the case in this study, the FGD focused on accessing resources that could improve food security, rather than interactions. It is not clear if humanitarian assistance or development projects that are focused on food security have a gender bias.

3.4. Changes over time in how social capital is used to improve food security

As food security changes over the season, so does the social capital used to improve access to food. Participants ranked the social capital typologies they would use in the lean period and in a period of medium food access. In 7 out of 12 of the FGD, rankings differed between the two time periods. The changes in rankings were mostly in the rankings of VSLA, ganyu and businesses (see example in Table 4); however, participants explained there have been bigger differences over the course of the last couple of years.

People’s ability to rely on family and friends during times of food insecurity has declined over the years. A participant in Phalombe explained that “there used to be a tighter unity but this has changed over the years as now everyone has problems (in terms of food/cash). There is now individuality-people will focus on their own household.” Previously, there was a wider group of family and friends, not just immediate family and close friends, who would help each other when they did not have food.

Several economic, environmental, and political changes in the communities have led to a restriction in food, cash and other productive resources, resulting in people finding it harder to share food, cash or invite people over for meals. A participant explained that “economically, money is scarce so you can’t give money either. Before if a relative had no spare food, they would give you some spare cash. It’s harder for relatives to give anything as generally, resources are less. Before we had more things to

Table 4
Zomba women’s inactive social capital and economic activity rankings during periods of low and medium food access.

Rank	Period of low food access	Period of medium food access
1st	Village savings and loan group Business Ganyu Friends Family NGO	Ganyu Business Village savings and loans group Friends Family NGO
7th	Government	Government

share but now there is not so much.” Similarly, additional economic activities such as ganyu and selling produce are often within the agricultural sector so they have also become more constrained as they too rely on optimal weather and a successful harvest. The lack of resources has also had a detrimental impact on the success of the VSLA as “there’s no business now so we don’t have the money to invest in the village bank. You can take a loan and do business, but you can’t pay back as no business is creating money.” The VSLA in the three communities have seen a decline in members as income has reduced over the last few years. Poor harvests and struggling non-farming businesses that provided additional income have resulted in lower incomes which thwart participation in VSLA. A participant explained the impact this has had as “the village bank helps with food security. But as the climate has changed and is negatively impacting farming, people are not able to pay back the bank.” This has a negative impact on food security, both directly and indirectly, as people can no longer rely on the VSLA for emergency loans or to invest in their farming businesses.

The linking social capital available to people to improve their food security has experienced the biggest change over the last 5 years. In Zomba a female participant said that “there is only one NGO now. [Participants] used to get MWK14,000 [approximately \$14 USD] a month to check dams and do environmental conservation. Now [the NGO] supervise but do not pay so it is like they’re not here at all.” Previously, NGO and government led projects and aid were in high abundance with most people in the community benefitting in some way.

In the ranking exercise, 9 out of 12 FGD would have ranked NGOs as 1st or 2nd when they were active in the community, but currently they are ranked in the bottom half. Similarly, the government and NGO assistance is usually only provided to the most vulnerable in the community and is not always reliable. For example the SCTP is a government programme that provides cash to the 10% most vulnerable households and in the 2021/2022 lean period the SCTP reached 16,836 households across the whole of Malawi (GoM, 2022). Given Malawi’s aid dependency, and that 70% of the population is living beneath the international poverty line, a large proportion of the population would benefit from government and NGO transfers, but the financial capabilities are not available (Kita, 2017; Chasukwa and Banik, 2019). Additional issues such as unsuccessful decentralisation (Kita, 2017), initial difficulties in delivering the new fertiliser subsidies (Kateta, 2022) and funding mismanagement (Adhikari et al., 2019; Nayupe et al., 2022) are potentially reasons for a reduction in government and NGO aid and projects in the communities. However, the reason for such a decline in government and NGO for food security specifically is not completely clear and more research is required to understand the changes.

The changes in bonding, bridging and linking social capital have had a detrimental impact on people’s food security. People cannot rely on family and friends, VSLA, NGOs or government to assist in accessing food in the way they could previously. Chronic poverty weakens support structures over time as peoples’ assets and resources slowly decline (Rose et al., 2013). Bonding social capital is only available to people if their bonding social capital ties have the economic capacity to help during periods of food insecurity. Bridging social capital that improves access to resources, rather than information, is also reliant on financial capital. The sustainability of VSLA in the communities is dependent on members being able to deposit money and repay loans. For example, during the COVID-19 pandemic VSLA in northern Malawi struggled as the number of people taking out loans and not paying them back increased (Munthali et al., 2022). Meanwhile, group participation has been found to decrease in Niger in the aftermath of a flood, especially amongst people with the lowest resilience (Boubacar et al., 2017).

Yet it is context specific. In the face of increased flood frequency, social networks may be strengthened (Rotberg, 2010). It is likely there is a threshold at which social capital can no longer withstand pressures and begins to decline. How social capital responds to changes is likely to be dependent on the type, frequency and size of the stressor the community is facing, as well as the state of the social capital prior to the stressor

(Lundgren and Strandh, 2022). The communities in this case study have experienced dry spells, poor harvests and/or NGO withdrawal which appear to have driven changes in social capital and how it is used to access food.

Social capital is constantly altering and adapting over time (Vervisch et al., 2013) and there is evidence of this in the communities, in particular the communities in Zomba and Phalombe which are experiencing more challenges than the community in Machinga. The change in linking social capital has had a knock-on effect as “when NGOs were available there was money in the village. Now businesses are hard to maintain and have no money. When NGOs were here, the village bank membership was higher as people had the capacity to join.”. A reduction in NGO activities and ability to access resources in this way has had a detrimental effect on the VSLA and therefore food security.

Accessing food and cash through NGOs freed up cash that could be invested into the VSLA, which were in turn used to improve food security. Similarly, linking social capital is connected to bonding social capital in the communities. The resources from NGOs ensured people had sufficient resources and could therefore share amongst each other. Generally, participants explained they shared more food when the NGOs were more active in the communities, with one female Zomba participant explaining that “(Since the NGOs left) there are problems now. People are not going to school; food is hard to find and people are no longer doing business. There is less sharing now, relations were better in the past when NGO were here. Everyone had money.”

Aid and the overall development process can alter social structures and sharing practises (Margolies et al., 2017). Although there is evidence that linking social capital has an influence on the bonding and bridging social capital in the communities, it appears aid improves and strengthens social capital. This is the counter to previous research in southern Malawi which argues that aid and development make people more individualistic and decreases sharing (Margolies et al., 2017). It is likely there has been a change in context between Margolies et al. (2017) data collection in 2016 and this study which is influencing how the social capital typologies are interacting with one another.

There was only one instance of the community working together to fill the gap left by linking social capital. In Phalombe, they had set up a food security group in response to aid leaving so they knew there would be some maize available in the lean period. The men in Phalombe explained that “you save 5 kg of maize and 2000 MWK [1.95 USD]. It helps to have food security. If the rains (or lack of) destroy some of your harvest, you still have some food to fall back on. At the end of the year, the food is given back out when food availability is low. When the NGOs started to withdraw, that is when the idea for the food security group came to fill the gap the NGOs had left.”

Ideally, the linking social capital that exists in rural Malawi would be bottom-up, but instead it can be described as without synergy (Woolcock, 1998) or unresponsive (Vervisch et al., 2013). This means people have limited to no agency in the relationships between NGOs and government, limiting people’s ability to attract and foster linking social capital. However, the existence of bridging social capital can be a good mechanism for drawing the attention of donors (Schou, 2009), again highlighting the interconnection of the social capital typologies.

It is clear there are different combinations of bonding, bridging and linking social capital that change over time and vary between men and women. The combinations of social capital typologies change, adapt and influence one another (Carmen et al., 2022), which impacts how they can be used to access food. Bonding social capital is used for “getting by” in life and as people develop economically, they start to invest and use their bridging social capital for “getting ahead” (Putnam, 2000; Woolcock and Narayan, 2000). The findings, however, show that bonding and bridging social capital are not simply swapped for one another, but they are interlinked. There appears to be a catalyst for social capital deterioration in the communities that feed into other social capital typologies. After a cyclone hit a Bangladeshi community, bonding social capital declined, bridging social capital increased and there were different

perceptions of how linking social capital changed (Khalil et al., 2021). Over time, the social capital was strengthened, although this took a matter of years rather than months. As the changes in the three Malawian communities are fairly recent, the restrengthening of the social capital typologies that can be used to access food may occur. The food security group in Phalombe is evidence of communities reacting to changes and restrengthening their bridging social capital. Understanding the combinations of bonding, bridging and linking social capital, how they can be used to access food and how they react to changes is important as it develops an understanding of how people can cope with food insecurity in different situations.

3.5. Implications

Previous studies have suggest social capital is a lifeline for the rural poor (Grootaert, 1998; Tibesigwa et al., 2016). Building the adaptive capacity of poor rural communities to cope with the impacts of climate change, food security and poverty is vital in areas where the climate and environment are changing. Social capital has been seen as an accessible, sustainable and cheaper option to improve adaptive capacity of such communities (Rotberg, 2010; Washington-Ottombre and Pijanowski, 2013; Tibesigwa et al., 2016). Yet, for the three communities in this study the social capital typologies are not always an accessible and sustainable option for them to cope with food insecurity in the context of multiple pressures that are negatively impacting livelihoods. Social capital is likely to play a role in coping with food insecurity, but prior to any pressures, social capital needs to be strong with ample resources embedded into the network. Our study has found there is a limit to what bonding and bridging social capital can withstand before it starts to become unusable.

Similarly, if social capital is used to improve access to food, it must be available to everyone. Despite social capital being the capital of the poor (Woolcock and Narayan, 2000), our findings show the poorest and most vulnerable do not always have access to bonding and bridging social capital. For example, women have limited bonding social capital due to their limited mobility and the poorest are financially excluded from community groups that would improve their food security status. Finally, linking social capital in the three communities has an impact on how bonding and bridging social capital can be used to access food. This study has highlighted just how interlinked the three typologies are in the context of food security.

This study also has implications for understanding the gender inequalities that exists within food security and social capital as well as how these inequalities may be exacerbated overtime. The temporal changes in the social capital typologies and how they are used to access food will likely have a disproportionate effect on women. Women are already more vulnerable to the impacts of food insecurity and removing one of their coping mechanisms may create further vulnerability (FAO, 2023; Liru and Heinecken, 2021; Tantoh et al., 2021). If social capital, in particular bonding social capital which women have usually relied on to improve access to food, becomes limited and conditional, they will need to find other ways to cope with food insecurity.

3.6. Limitations and future research

Conducting research in an additional two communities would have strengthened this work. A community in an area with optimal weather and a community with NGO presence would have enriched the findings. A comparison could have been made between the stock of the social capital typologies, and how it is used to access food, between communities with different weather conditions and NGO activities. The study also takes a static data collection approach to explore temporal differences in social capital and food security. The research would have been improved if the data collection occurred at two different time points so changes could have been compared over time (Adams et al., 2021).

Carrying on from this study, future research should focus on how

much pressure social capital typologies can withstand before they begin to disintegrate and cannot be utilised to access food (Goulden et al., 2013; Rotberg, 2010). In the context of chronic poverty and changes in the climate and the environment, it would also be useful to explore how bonding and bridging social capital can be built up to withstand such conditions. Finally, the study identified temporal changes in the combinations of social capital typologies and how this can be used to access food. A more in depth understanding of what this could mean for future food insecurity, whilst considering gender differences, would also be useful.

4. Conclusion

This study aimed to understand how gender and temporal patterns intersect with the social capital-food security nexus using southern Malawi as a case study. We found moderate or severe food insecurity existed in the communities, with women perceiving food accessibility to be worse for longer periods of the year compared to men. Men and women also had different social capital. As found in other studies (Addis and Joxhe, 2017; Grant and Pike, 2019; Katungi et al., 2008), women's mobility restrictions resulted in smaller bonding social capital networks. Meanwhile, village savings and loans associations were attended and ran by women, and were deemed particularly important for improving access to food. This is a diversion from previous research and theory which has found that women are excluded from bridging social capital (Klasen et al., 2011; McCarthy and Kilic, 2015). However, the findings from this paper suggest female-headed households are excluded due to lack of resources and poverty.

The way in which the social capital typologies were used to access food across the season exhibited some differences. Interestingly, the changes over the past 5–10 years in how bonding, bridging and linking social capital is used to improve food security are quite pronounced. This aligns with previous research that has found social capital decline in sub-Saharan Africa (Kansanga, 2017; McNamara, 2019; Motsholapheko et al., 2011; Nkhata et al., 2009), yet the causes are contrasting. Numerous pressures on livelihoods and the reduction in NGOs has altered the social capital in the communities, meanwhile previous studies have stated economic development or changes in culture as the cause of social capital decline (Motsholapheko et al., 2011; McNamara, 2019). This study also highlighted how interlinked bonding, bridging and linking social capital are in their use for improving food access. The findings from this study improves the understanding of how the social capital-food security nexus is influenced by gender and changes over time, which is a key research gap that needed to be answered before social capital is embedded in food security projects and policies. Finally the study highlights that there are changes occurring in how social capital is used to access food, raising the question about the future of this coping mechanisms as food insecurity worsens.

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Author statement

Ailish Craig: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Visualization; Roles/Writing - original draft; Writing - review & editing. Craig Hutton: Supervision; Writing - review & editing. Frank Musa: Validation; Writing - review & editing. Justin Sheffield: Supervision; Writing - review & editing.

Declaration of competing interest

The authors declare that they have no conflict of interest.

Data availability

Data will be available October 28th, 2023 after an embargo period at this address: <https://doi.org/10.5258/SOTON/D2574>.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jrurstud.2023.103039>.

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