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Exploring the role of community satisfaction

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Published in:
Heliyon

Published: 01/10/2023

Document Version:
Final Published version, also known as Publisher's PDF, Publisher's Final version or Version of Record

Published version (DOI):
10.1016/j.heliyon.2023.e20361

Publication details:
Tassang, A. E., Guoqing, S., Akintunde, T. Y., Sayibu, M., Isangha, S. O., Adekunle, A., & Musa, T. H. (2023). Social integration, solidarity, and psychological health of internally displaced persons in Cameroon: Exploring the role of community satisfaction. *Heliyon*, *9*(10), Article e20361. https://doi.org/10.1016/j.heliyon.2023.e20361

Heliyon 9 (2023) e20361

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon

Social integration, solidarity, and psychological health of internally displaced persons in Cameroon: Exploring the role of community satisfaction

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ARTICLE INFO

Keywords:
Psychological health
Solidarity
Social integration
Community satisfaction
Internally displaced persons
Cameroon

ABSTRACT

Background/Introduction: Conflict-induced displacement continue to be a pressing public policy concern due to the adverse effects on the well-being of internally displaced persons (IDPs). Understanding the integration process of these individuals, particularly the role of solidarity and social integration in fostering a sense of belonging and improving their community experiences and psychological well-being, remains unclear. This study investigates the role of community satisfaction in the relationship among social integration, solidarity, and psychological health of IDPs in Cameroon.

Methods: Cross-sectional data from 428 displaced individuals in the Ntui subdivision, Cameroon, were analyzed using structural equation modeling (SEM). This technique tested four latent variables: social integration, solidarity, community satisfaction, and psychological health.

Results: The results show a direct association between solidarity and both community satisfaction ($\beta = 0.282$; $p < 0.001$) and psychological health ($\beta = 0.137$; $p < 0.01$). Community satisfaction also has a direct relationship with the psychological health of the IDPs ($\beta = 0.292$; $p < 0.001$). An indirect effect of solidarity on psychological health through community satisfaction was observed ($\beta = 0.084$ (SE = 0.025, CI = [0.047, 0.129], $p < 0.001$)). However, no mediational effect of community satisfaction was found on the association between social integration and psychological health. The model accounted for 7% of the variance in community satisfaction ($R^2 = 0.07$) and 20% of the variance in psychological health ($R^2 = 0.20$). Conclusion: The findings indicate a strong sense of solidarity among the displaced persons in the studied communities in Cameroon, which promotes their psychological health via community satisfaction. As such, interventions should aim to foster solidarity among displaced persons to enhance their community experiences and psychological health.

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https://doi.org/10.1016/j.heliyon.2023.e20361
Received 3 July 2022; Received in revised form 5 September 2023; Accepted 20 September 2023
Available online 21 September 2023

1. Introduction

Refugees, asylum seekers, and internally displaced persons (IDPs) are increasing globally, resulting in complex humanitarian challenges [1]. Globally, 84 million people were internally displaced in mid-2021 period, primarily in Sub-Saharan Africa (SSA) [2]. Recent projections show an additional 5.4 million people will be displaced by 2024, with SSA experiencing the greatest increase, accounting for 3 million of these projections [3]. Therefore, internal displacement resulted in $21 billion in economic and financial impacts in 2021, necessitating the development of initiatives to provide displaced persons with options for local reintegration [4]. According to the 2020 estimates, 1,033,000 people was displaced due to conflicts in the Anglophone and northern regions of Cameroon, where this study was conducted [5,6]. A government-Ambazonian militant group civil war is being referred to as the Anglophone crisis which has caused conflicts and internal displacement of people. These people fled the conflict torn region to move to places like Yaoundé the capital of Cameroon.

Several studies have examined the socioeconomic and health vulnerabilities of displaced persons in Cameroon [7–9]. The lack of information regarding displaced persons' integration into host communities could result in displaced persons having difficulty accessing comprehensive psychosocial assistance. Since it is unclear how displaced persons can integrate socially, establish solidarity, and feel a sense of belonging in their host environment to reduce the negative effects of displacement [10], the after-effects of the regional conflict, will continue to expose them to psychological vulnerabilities [4]. While many studies have focused on physical health and socioeconomic challenges faced by displaced persons, there has been little research on social networks supporting their psychological health [11,12]. Most studies have focused primarily on physical health and socioeconomic challenges of displaced persons, and have failed to extend the literature on social networks that support their psychological health [8,13,14]. In light of this, policy interventions that promote the sense of belonging among these displaced persons and promote their community experience and psychological health can benefit from identifying the grey areas of the integration processes, such as solidarity and social integration that facilitate a sense of belonging. In this study, community satisfaction was examined in relation to the interrelationships between social integration and solidarity as determinants of psychological health among displaced persons.

Global evidence suggests that IDPs, especially those affected by conflict, are highly susceptible to psychological problems such as post-traumatic stress disorder (PTSD) and depression [15–18]. Many displaced persons suffer from psychological vulnerabilities due to overcrowding, poverty, and challenges in accessing economic opportunities [19,20]. Depression among non-married displaced persons and continuous victimization of those who lost family members are among the challenges displaced persons face in places like Kenya [21]. IDPs with psychological problems are stigmatized constantly, even in countries such as Sudan that offer interventions to improve their psychological well-being [18]. Moreover, displaced persons with gender-related issues, such as women who experience violence [17], and children who experience conflict-induced trauma [22], are more likely to suffer from psychological problems. In addition, resentment and alienation cause displaced persons to have difficulty integrating [23]. Resentment and alienation are known to be detrimental to the psychological health of displaced persons [24]. Due to these disadvantages, it becomes difficult to promote psychological well-being through local reintegration and group cohesion [4,25].

Integration and developing social networks among people of similar attributes is vital for harnessing socioeconomic opportunities and reducing resentments of IDPs [26,27]. The ability to socially integrate and form solidarity is critical to developing social networks that can also promote psychological health [28,29]. Social integration aims to promote values, relationships, and connections that encourage the equality of rights and dignity of everyone in any social setting [30]. Social integration involves various factors for integrating displaced persons into mainstream society [31,32]. These factors are related to regular contact and connections with neighbors [33], tolerance, fellowship, and mutual respect [31], and building a social network of friends readily available to provide physical and emotional supports [19]. However, the level of social integration of displaced persons depends on the size of their community and their ties to it, such as family, language, culture, and the desire to thrive [34]. Integrating displaced persons into their new communities and actively participating in activities in these communities can further lessen the traumatic effects of displacement, bringing harmony between them and their host communities regarding community satisfaction [15,35].

Moreover, the kindness of those living in the same community may be the primary source of support for displaced persons [36]. Supporting one another strengthens bonds and increases the possibility of harnessing coping mechanisms, stabilizing, and accessing socioeconomic and psychological resources [37]. Groups living in the same community provide mutual reliance, reciprocal relationships, and support to each other, which is considered to be an element of solidarity [38]. Solidarity is portrayed as oneness and collaboration within a community as a means of adaptation and thriving [28]. NGOs often support displaced persons by providing assistance and aid, educating them, and encouraging them to support one another in their new communities [39]. Nonetheless, displaced persons continue to face significant solidarity challenges due to the lengthy integration and socializing process in their new communities [40]. In the absence of solidarity, displaced persons are more likely to face challenges causing strains on their livelihood and psychological health.

Therefore, displaced persons could harness "people" resources within their communities to enhance their psychological health. A community consists of people living in a defined geographical area with similar interests, ties, or emotional connections [41]. Increasing social integration and solidarity among displaced persons can promote community experiences by channeling group cohesion [42]. IDPs able to find objective fulfillment in their environment can enhance their community experiences, i.e., community satisfaction [42,43]. Compared with individual satisfaction, community satisfaction refers to people's subjective assessment of their community experience based on their local community's ability to meet their needs [44,45]. Community satisfaction measures how people's sense their neighborhood or environment meeting their daily needs [43]. However, there is limited literature on how displaced persons can harness solidarity and social integration to promote community satisfaction. Moreover, the literature on how social

integration and solidarity affect the psychological health of displaced persons through community satisfaction remains limited. Therefore, this current study is timely as it seeks to fill the research gap in understanding how social integration and solidarity affect the psychological health of displaced persons through community satisfaction.

While several studies have reported that displaced persons in Cameroon are at risk of poor well-being, there is scant evidence on how social network formation support their community satisfaction and psychological health. This study investigates the effects of social integration and solidarity on community satisfaction and the psychological health of displaced persons affected by the Anglophone crisis in Ntui Sub-Division, Centre Region of Cameroon. The study examined the role of community satisfaction in the interrelationship among solidarity and social integrations as they influence the psychological well-being of the displaced persons.

In the following part of the article, there is theoretical foundation for the study model, followed by a description of the methodology, the study design, methods for collecting data, research instruments, and analysis of the results. A section is dedicated to presenting the results of the analysis; in the concluding section, a conclusion is provided and a discussion of the study is provided.

2. Theoretical background

Several interconnected theoretical perspectives provide significant linkages between social integration, solidarity, and psychological health through community satisfaction [46]. Developing schemas to relate within the community and solving social problems associated with their situation is an important process for displaced persons to thrive mentally [47,48]. Various factors, such as individual characteristics, backgrounds, and neighborhood dynamics could help displaced persons form these schemas. The collective efficacy theory, rooted in Bandura's self-efficacy theory [49], suggests that all individuals are competent and capable of success if they have the opportunities and capacity to achieve their goals [46]. Collective-efficacy theory emphasizes the importance of empowering individuals and communities with a sense of agency, such as shared values and resources working together for goal achievement [50]. Sense of agency and oneness could make displaced persons in Cameroon less frustrated about their circumstances, i.e., reduced community strains and promoting community experiences. A positive experience through collaborative efforts in the community could reduce environmental pressures, stresses, and depression for displaced persons, thereby promoting their psychological health. A sense of belonging and oneness among displaced persons in Cameroon is sufficient for them to improve their capacity to solve collective problems if they socially integrate and bond properly into their communities. By promoting community satisfaction, social integration and solidarity can contribute to displaced individuals' psychological health.

Furthermore, social identity theories hold that identifying with one's neighborhood or environment can promote psychological health and community experience through solidarity and integration [51]. As a consequence of its focus on intergroup relations, social identity posits that people who identify with a group feel a strong attraction to the group and are more likely to participate in its culture, separate themselves from out-of-group counterparts, and exhibit behavior that reflects their interest to the group they belong [52]. As evidence grows that displaced persons face significant alienation in their host communities, they are likelier to feel a stronger connection with others who share their attributes [53]. Identifying with and having a strong relationship with other displaced persons could advance their in-group affiliation. Subsequently, when displaced persons identify with members of the same group, they feel less pressure from external influences and focus more on activities that promote their community experiences. Activities that deepen community experiences may contribute to the psychological health of the displaced persons.

Several aspects of the sense of community theory suggest people have a positive affinity for social and community groups they belong [54]. Consequently, it is hypothesized that when displaced persons relocate into a community, they are more likely to develop an affinity for the community that provides shelter and socioeconomic opportunities for them. Furthermore, social capital theories suggest that people within a group or community may develop social networks, trust, and solidarity to promote collective actions to improve their well-being [55]. IDPs may need to establish a sense of community to integrate socially and encourage solidarity. As a means of adaptation, solidarity promotes group effort to support and collaborate within a community to harness social capital (i.e., people resources) [28,56]. Consequently, it is possible that the community experience of displaced persons may improve as they are socially integrated and develop a sense of oneness [57]. As a result of improved community experience [58,59], displaced persons may experience improved psychological health when they feel a sense of belonging to their community. Therefore, community satisfaction may have an impact on the interrelationships of solidarity, social integration and psychological health of displaced persons. The

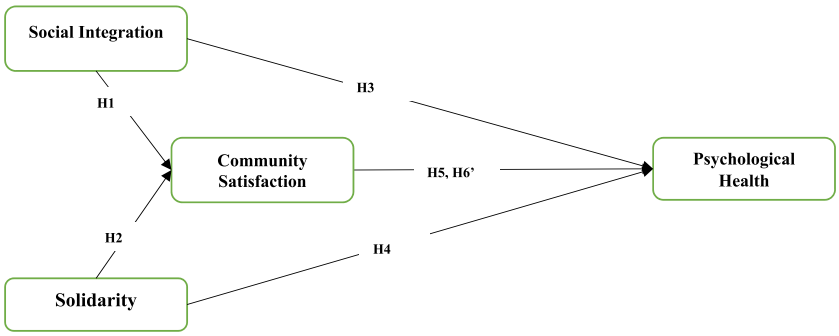

Fig. 1. Conceptual framework.

proposed theoretical and conceptual framework is shown in Fig. 1.

2.1. Current study

Based on the theoretical foundation presented above, this study examined the direct effects of solidarity and social integration on the community satisfaction and psychological health of IDPs in Ntui Sub-division, Cameroon. Additionally, the study examined the mediation effect of community satisfaction in the interrelationship between solidarity, social integration, and psychological health.

3. Methods

3.1. Study design, population, and data collection

A cross-sectional study was carried out to examine the mediation effects of community satisfaction in the influences of social integration and solidarity on the psychological health of Anglophone IDPs in the Ntui subdivision, situated in the central region of Cameroon. A cross-sectional study enables the exploration of population behavior and experiences at a particular point in time. Furthermore, the theoretical and hypotheses tested in our study can stimulate future research and theoretical extensions regarding the importance of community satisfaction in maintaining social networks and psychological wellbeing of displaced people. By increasing cross-sectional research, longitudinal studies among IDPs are expected to be promoted.

Ntui subdivision comprises 31 local communities and has seen a substantial inflow of displaced persons fleeing the Anglophone crisis in Cameroon's Northwest and Southwest regions. Ntui subdivision has gained relevance over time due to its proximity to the country's capital (Yaoundé) through urbanization. The regional conflict in Cameroon encouraged the influx of displaced persons to the Ntui subdivision, a predominantly francophone zone. These communities are known for farming, and most displaced persons engage in this activity to sustain themselves and their families. Three NGOs employees who work with displaced population and well trained in questionnaire enumeration were recruited to conduct the survey. These NGO employees have access to the IDPs in Ntui based on their experience with the NGO supporting through humanitarian services. The questionnaire enumerators employed snowballing technique to locate houses where IDPs live in the communities. The questionnaire enumerators used both French and English in communicating with the respondents through face-to-face close/structured questionnaire administration. The questionnaire survey took approximately 10 min to complete for each participant. The data collection was conducted between 15th March to 10th May 2021. A recent estimate reported that 933,000 displaced persons were hosted in Cameroon as of 2021 [60]. The sample size was therefore calculated based on this population size, with a Confidence Interval (CI) of 95% and a margin of error (4.75%), resulting in 425 eligible participants for representation [61]. A total of 428 IDPs were recruited to participate in the study.

Inclusion and exclusion: Males and females aged 20 and above who are resident in these Ntui subdivision communities were recruited for the survey using purposeful sampling to identify and reach the targeted population. The age cut-off was 20 to ensure that participants are independent and understand the concept and scope of the research objectives. Those recruited for the survey were IDP residents in the Ntui subdivision who fled the Anglophone crisis from the Anglophone regions of Cameroon.

Ethical Consideration: Institutional approval was obtained from the Department of Public Administration at Hohai University. This study was ethically approved by Ntui's governing bodies (No.018/AS/CUNTUI/SG/SA/2021). Informed consent was received from all participants. A survey authorization and informed consent question was used to obtain participants' permission. Study participants were informed that participation was voluntary and further assured of anonymity and data privacy.

3.2. Measures

Social Integration: This measure underpins various concepts to assess behavioral patterns based on the need for individuals to integrate into communities to facilitate personal growth and improve quality of life [29,62]. These scales are important to describe relationships related to financial support, belonging, and friendship. The context of the population should be explored when exploring social integration tools [62]. Six dimensions were integrated to measure social integration relating to questions like "Generally, I get help with my finances, borrow things and receive favors from my neighbors", "how much can you rely on friends, families or others to solve your problem" and "most of the people I communicate with have similar attributes like me". The questionnaire assessing social integration is in Appendix 1. All questions were measured with a 5-point Likert scale such as (1. Never, 2. Sometimes 3. Often, 4. Very often, and 5 always). Cronbach Alpha reliability test was estimated at $\alpha = 0.75$.

Solidarity: Solidarity is conceptualized as more individual and societal attributes and behavior [63]. Solidarity was measured based on integrated five dimensions assessing the feeling of concerns of people, including family and neighborhood; the extent to which they feel concerned about the living conditions of their immediate family, people in their neighborhood, people of the community they live in, their fellow displaced persons, and children in low-income families. The concerns also buttress the efforts to unite and solve the common problem to foster group harmony. These responses were measured using a 5-point Likert scale consisting of (5. Very much, 4. Much, 3. To a certain extent, 2. Not as much, 1. Not at all). These questions were acquired from the FAO Household Livelihood Questionnaire [64]. Cronbach Alpha reliability was estimated at $\alpha = 0.84$.

Community Satisfaction: These domains focus on social ambience exhibited among the displaced persons based on acceptance situation in the community that can facilitate achieving goals and aspirations [65]. Community satisfaction was appraised among the displaced persons to establish their ability to coexist amid their vulnerability to achieve group and individual ambitions. IDP's community satisfaction was premised based on scale for measuring community satisfaction [45,66]. Community satisfaction was

measured via five-item 5-point Likert scale questions (1-strongly disagree and 5-strongly agree). Cronbach Alpha reliability was estimated at $\alpha = 0.99$.

Psychological Health: The psychological health domain explored the displaced persons' overall emotional and mental well-being to consolidate their feelings, coping mechanisms, and resilience associated with stress. The IDP's psychological health was measured based on the 6 items validated scale of the WHOQOL [67,68]. Questions such as The psychological health construct was measured via 5-point Likert scale items (5. An extreme amount, 4. Very much, 3. moderate, 2. A little, 1. Not at all). The Cronbach Alpha reliability was estimated at $\alpha = 0.85$.

3.3. Control variables

Various socio-demographic characteristics assessed as control variables were sex (male and female), age (20–25, 26–30, 31–35, 36–40, and >40), and education (none, primary, secondary and tertiary) and marital status (married, single, widowed, and divorced) were also explored. Socio-demographic variables were controlled for because several studies have indicated that these factors influence the formation of social networks [28,29,69]. By controlling for these socio-demographic variables, all forms of bias resulting from the different characteristics of the recruited displaced persons are controlled.

3.4. Analytical strategy

Descriptive statistics were computed using SPSS Version 25.0, including bivariate analysis (correlations), mean and standard deviation. The maximum likelihood estimation of latent and observed variables was done using AMOS Version 20.0 using structural equation modeling (SEM). Before testing the SEM model in the dataset, confirmatory factor analysis (CFA) was performed [70] to validate the measurement model's goodness of fit. To validate any research instruments (survey questionnaire) in any population, two approaches are adopted such as reliability (Cronbach's alpha) and validity (Confirmatory factor analysis). We used these two approaches. A CFA is a powerful methodology that ensures that the items included in the latent variable are valid which is reflected in the factor loadings [70]. A latent variable factor loading >0.50 was used to assess the fitness of the measurement models [71]. A bootstrapping method assessed indirect effects (n = 5000 bootstrap randomly selected samples) [72].

SEM models should have a Comparative Fit Index (CFI), a Normed Fit Index (NFI), and an Incremental Fit Index (IFI) greater than 0.95 based on recommendations. Root-mean-square errors are also acceptable if they are less than 0.06 [73]. To interpret the regression coefficients of the regression models (β), Empirical guidelines for categorizing beta coefficient was used for the path analysis [74]: $\beta = 0.1$ indicated a small, $\beta = 0.3$ a medium and $\beta = 0.5$ a large effect. The significance level was determined as $p < 0.05$ for all analyses. Overall, the analysis demonstrate the direct and indirect relationships of the variables in the model and conclude on the effect size using R^2. According to Hair et al. [75], R^2 estimations of 0.75, 0.50, and 0.25 shows a high, moderate, and low variance of the predicting effect of the variables in the models, respectively.

4. Results

The characteristics of the study population are presented in Table 1. Among the total number of recruited participants, sex distribution was 49.07% females to 50.93% males. The unemployed among the recruited displaced persons were over 76% of the study population. Table 1 shows the majority of the age range was 66.82% (20–25). The characteristics show education none/primary and high school indicated a high frequency compared to university graduates.

Table 2 shows the correlation matrix with a moderate positive association between community satisfaction and psychological health ($r = 0.337$, $p < 0.01$) indicating that when there is a positive increase in community satisfaction, there is a moderate 0.337 coefficient increase in psychological health. Additionally, solidarity has a positive correlation with psychological health ($r = 0.116$, $p < 0.01$) indicating that when there is a positive increase in solidarity, there is a low 0.116 coefficient increase in psychological health.

Table 1
Sociodemographic characteristics of the IDPs (n = 428).

Variable	Measures	Freq (%)
Sex	Female	210 (49.07)
	Male	218 (50.93)
Age	20–25	286 (66.82)
	26–30	84 (19.63)
	31–35	17 (3.97)
	36>	41 (9.58)
Education	None/Primary	86 (20.1)
	Secondary/High school	270 (63.23)
	University	72 (16.8)
Marital Status	Single	321 (75)
	Widowed/Divorced	12 (2.8)
	Married	95 (22.2)
Employment	No	328 (76.64)
	Yes	100 (23.36)

Similarly, age and psychological health are positively correlated ($r = 0.099$, $p < 0.05$) suggesting that when age increases, there is a low 0.0.09 coefficient increase in psychological health. There is a correlation between solidarity and community satisfaction ($r = 0.204$, $p < 0.001$), which means that when solidarity rises, community satisfaction improves by a small coefficient of 0.204. Education is significantly associated with community satisfaction ($r = 0.099$, $p < 0.05$) and solidarity ($r = 0.194$, $p < 0.01$).

Table 3 indicates the reliability and factor loading of the constructs showing higher score value above 0.5 thresholds (0.500 - 0.999) as an acceptable fit. According to the confirmatory factor analysis (CFA) results, certain factor loadings were greater than the 0.50 threshold and were included in the latent constructs for the SEM [76]. Other factor loading that were less than 0.5 threshold were deleted and excluded from the latent constructs (i.e., PH1, SI5, S1). This removal was necessary because the factor loadings less than 0.5 does not adequately reflect the construct it was intended to measure [77]. The scales for each research instruments are within the acceptable Cronbach alpha 0.70.

4.1. Primary Model

The results of the analysis premised on the total population provided a good model fit for the data [χ^2 (158, N = 428) = 385.254, $p < 0.001$, and with NFI = 0.955, IFI = 0.973, CFI = 0.973, and RMSEA = 0.058]. Details of the paths in the model are shown in Fig. 2 and Table 4. The result shows solidarity is directly associated with community satisfaction ($\beta = 0.282$; $p < 0.001$) suggesting that with 1 standard deviation increase in solidarity, there is a 0.282 standard deviation increase community satisfaction. In addition, solidarity is significantly associated with psychological health ($\beta = 0.137$; $p < 0.01$) suggesting that with 1 standard deviation increase in solidarity there is a 0.137 standard deviation increase in psychological health. Community satisfaction is directly associated with psychological health ($\beta = 0.292$; $p < 0.001$) suggesting that with 1 standard deviation increase in community satisfaction there is a 0.292 standard deviation increase in psychological health. Overall, the analysis, when considering all the model measures, accounted for 7% of the explained variance in community satisfaction ($R^2 = 0.07$). This result indicated solidarity and social integration explained 7% of the variance in community satisfaction after controlling for other variables in the theoretical model. Meanwhile, the variance explained of the psychological health when considering all the factors included in the study model is 20% (i.e., $R^2 = 0.20$). This result suggested that the interrelationships among solidarity, social integration and community satisfaction explained 20% of the variance in psychological health of the IDPs after controlling for other socio-demographic variables in the theoretical model.

4.2. The mediation role of community satisfaction

Additionally, 5000 samples was generated through bootstrapping sampling strategy from the initial dataset by random sampling to evaluate the indirect effect in Table 5. This approach is used to resample of the population sample to generate robust and reliable result. It further allows to remove all bias in conducting mediation analysis.

The results indicates that the indirect effects (mediation) of solidarity on psychological health through community satisfaction is 0.084 (SE = 0.025, CI = [0.047, 0.129], $p < 0.001$). This shows that the standardized indirect effect of solidarity on psychological health is 0.084 (i.e., when solidarity goes up by 1 standard deviation, psychological health increase by 0.084 standard deviations). These results support the understanding community satisfaction mediates the association between solidarity and psychological health of the displaced persons through community satisfaction. The mediation effects of community satisfaction in the association between solidarity and psychological was valid and accepted since the outcome of the indirect path was significant ($p < 0.001$).

On the other hand, the result of the indirect (mediation) effect of social integration on psychological health through community satisfaction was −0.036 (SE = 0.021, CI = [−0.079, −0.006], $p = 0.052$) which is insignificant.

5. Discussion

Conflicts in Cameroon have caused internal displacement and threatened livelihoods and psychological health. With most of the population being Francophone and Anglophone, Cameroon is an ethnically diverse country. Numerous Anglophones have been forced to flee their homes due to the Anglophone crisis. IDPs face numerous humanitarian challenges and uncertainties that require urgent research mediation and policy interventions [15,78]. The present study investigate how social integration and solidarity as elements of social networking and group association contribute to displaced persons' psychological health through community satisfaction.

Contrary to empirical studies suggesting social integration could promote health outcomes, neither community satisfaction nor

Table 2
Pearson correlation matrix.

Constructs	1	2	3	4	5	6	7	8
1 Psychological Health	1							
2 Community Satisfaction	.337**	1						
3 Solidarity	.166**	.204**	1					
4 Social Integration	−.053	−.082	.032	1				
5 Gender	.043	.080	.076	.017	1			
6 Age	.099*	.067	.017	.038	.057	1		
7 Education	−.002	.099*	.194**	.153**	.126**	.197**	1	
8 Marital Status	−.079	−.011	−.057	−.018	.031	−.293**	−.131**	1

Table 3
Mean, standard deviation, reliability and factor loadings.

Constructs	Mean	SD	Factor Loadings	Cronbach's Alpha
Community Satisfaction (CS)	14.175	4.778		0.999
CS1			0.995	
CS2			1.000	
CS3			0.996	
CS4			0.996	
Psychological Health (PH)	18.049	4.361		0.814
PH2			0.794	
PH3			0.755	
PH4			0.800	
PH5			0.716	
Social Integration (SI)	15.532	5.593		0.778
SI1			0.578	
SI2			0.768	
SI3			0.710	
SI4			0.758	
SI6			0.585	
Solidarity (S)	13.327	4.905		0.839
S2			0.741	
S3			0.738	
S4			0.809	
S5			0.747	

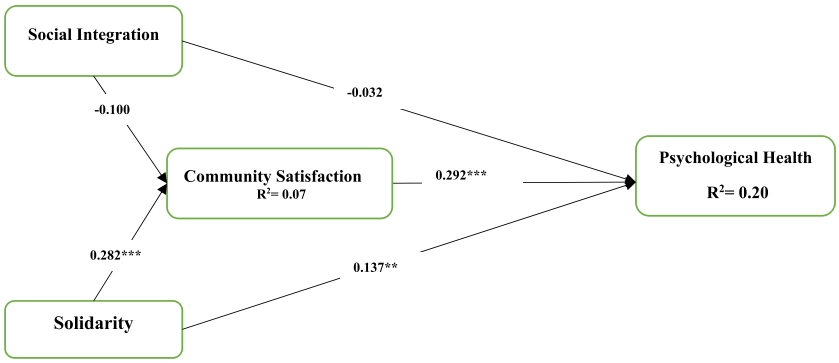

Fig. 2. (Primary Model); ***p < 0.001; **p < 0.01; *p < 0.05; Controlled for gender, age, education and marital status.

Table 4
Non-standardized and standardized path coefficients of social integration, solidarity, community satisfaction and psychological health.

	B	*β*	SE	CR	*P*-value
Community Satisfaction < – Social Integration	−0.188	−0.100	0.098	−1.913	0.056
Community Satisfaction < – Solidarity	0.282	0.231	0.064	4.416	***
Community Satisfaction < – Marital Status	0.072	0.030	0.119	0.601	0.548
Community Satisfaction < – Education	0.119	0.064	0.090	1.322	0.186
Community Satisfaction < – Age	0.71	0.066	0.054	1.316	0.188
Psychological Health < – Community Satisfaction	0.292	0.363	0.042	7.015	***
Psychological Health < – Solidarity	0.137	0.139	0.054	2.548	**
Psychological Health < – Social Integration	−0.032	−0.021	0.081	−0.399	0.690
Psychological Health < – Marital Status	−0.179	−0.091	0.098	−1.815	0.069
Psychological Health < – Education	−0.049	−0.022	0.074	−0.663	0.507
Psychological Health < – Age	0.069	0.078	0.045	1.536	0.125

Note: ***p < 0.001; **p < 0.01; *p < 0.05; B: (Unstandardized coefficient); β: (Standardized path coefficient); S.E: Standard error; C.R: Critical ratio.

psychological health is directly related to social integration of the displaced persons [79]. These findings suggest that despite these displaced persons attempting to integrate socially into their host communities, their experiences of community satisfaction and psychological health remain unsupported. Based on these findings of social integration dynamics, this study sheds light on how IDPs face problem in promoting their psychological health. According to the situation of IDPs, social exclusion, discrimination, disrupted social networks, and post-traumatic stress may impede their ability to integrate into communities, disconnecting them from promoting

Table 5
Bootstrap (5000 samples) and 95 confidence interval showing mediation effects community satisfaction.

Solidarity –> Community Satisfaction–> Psychological Health				
Effects	β	SE	LB - UB	p-value
Total	0.223	.065	0.113–0.327	**
Direct	0.139	0.061	0.040–0.241	*
Indirect	0.084	0.025	0.047–0.129	***
Social Integration– > Community Satisfaction– > Psychological Health				
Effects	β	SE	LB - UB	p-value
Total	−0.058	.060	−0.156 – 0.042	0.337
Direct	−0.021	.055	−0.109 – 0.072	0.718
Indirect	−0.036	.021	−0.079–−0.006	0.052

Note: LB: lower bounds; UB: upper bounds; ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

community satisfaction and psychological health. Typically, when discrimination or social exclusion occurs, IDPs cannot form social networks. Without social networks, they cannot enhance community satisfaction or psychological health.

However, the study found that solidarity was positively associated with community satisfaction. Studies have suggested that a sense of oneness in communities may enhance community satisfaction [80]. The presence of solidarity among displaced persons is associated with greater community satisfaction. The importance of solidarity in community satisfaction of IDPs can be attributed to its provision of social support, the reinforcement of shared values and identity, the promotion of collective action and problem-solving, as well as the promoting environmental safety.

Furthermore, the findings indicate that solidarity contributes positively to the psychological health of the displaced persons. These findings are consistent with theories on social capital and collective efficacy expounding on social network formation [46,55]. For example, through the promotion of trust, cooperation, and reciprocity within communities, solidarity fosters collective efficacy, which is intertwined and mutually reinforcing. Collective efficacy supports solidarity by providing a foundation for shared understanding, collaborative action, and support when needed i.e., social capital. When IDPs receive support through collaborative action, it enhances their psychological health. Considering the unique situation of displaced persons in Cameroon, those who can create group unity and association can enhance their psychological health [56,81,82]. Although displaced persons constantly worry about their socioeconomic disadvantages, their sense of community can be seen in their solidarity, which is one attribute they have developed. Solidarity allows them to adapt and promote their psychological health, emotional, cognitive, behavioral, and social well-being [28,56].

The findings confirmed the association between solidarity and psychological health through community satisfaction. Through community satisfaction, solidarity of the displaced persons can indirectly influence their psychological health. The evidence among displaced persons suggests that those who can channel solidarity are more likely to have community satisfaction, which in turn increases their psychological health. The findings are consistent with social identity theories, which consider social identity as a function of membership in various social groups and communities. When IDPs identify strongly with a particular group, it strengthens the community's shared values, norms, and identities [51]. As these displaced persons identify themselves with the community, they begin to feel belonging and enjoy the oneness that promotes their psychological health [52,65]. When IDPs feel that their beliefs and values are aligned with others' beliefs and values in the same group, there is an increased sense of togetherness and satisfaction, which further promotes psychological health.

Overall, the association between solidarity and psychological health was mediated by community satisfaction. Based on the study model, 7% of variance was explained for community satisfaction, and 20% was explained for psychological health. According to Cohen 1992 [83], these effect sizes are considered small. However, the findings present a unique situation of the IDPs that warrants further investigations into factors that may promote their community satisfaction and psychological health. Based on the model fit indices, accepting this theoretical model is justified as applicable to the situation of the displaced persons explored in the study. These findings suggest that the model explain a significant aspect of what contributes to the psychological health of the IDPs in the Ntui subdivision in Cameroon. Given this evidence, IDPs are encouraged to continue to channel their oneness and together to continue to promote their community satisfaction which in turn will help them have positive psychological health.

Limitations: The study is not without limitation despite its strengths. A validated research instrument was used for the first time in Cameroon to examine the interrelationship between solidarity, social integration, community satisfaction, and psychological health of IDPs. The study also provides empirical evidence on the theoretical perspectives on how social networks promote the psychological health of displaced persons by using an appropriate sample size and analysis technique. While the sampling method limits the generalization and bias of the study to displaced persons who are nested in other regions, the study still has some relevance. Future studies could use the research objectives in other settings to make causal inferences using a longitudinal approach [84,85]. Nevertheless, the findings extend general knowledge about the experiences of displaced persons in Cameroon and can be useful for local and international policies.

Research implication: The unique circumstances of IDPs present numerous challenges to them. Global debates on IDPs have focused on humanitarian or government interventions for the betterment of displaced persons. This study found that solidarity plays a crucial role in improving community satisfaction and psychological health among displaced persons. To strengthen the psychological health of displaced persons, solidarity is crucial to increasing community satisfaction. Looking inward to people of similar attributes can enhance the psychological health of displaced persons when humanitarian and government assistance are strained. Having a strong

sense of solidarity fosters unity, which makes it easier to act as a group and collectively. When channeled effectively, solidarity is capable of improving the psychological wellbeing of vulnerable groups, like displaced persons. It is important to introduce programs that promote harmony within IDP settlements, since group harmony promotes solidarity and positive local experiences within communities. Future studies building on this study should consider multiplicity factors such as resilience, active participation and self-worth that could promote community satisfaction and psychological health of the IDPs.

6. Conclusion

Global societal, economic, and environmental needs have resulted in a rise in the number of displaced persons, refugees, asylum seekers, or IDPs. The socioeconomic and psychological health of displaced persons in Cameroon is negatively affected by displacement due to armed conflicts and violence. This study investigated the roles of social integration and solidarity in improving the psychological health of displaced persons in Cameroon, with a focus on therole of community satisfaction. Displaced persons' psychological health and community satisfaction are not influenced by social integration. However, the findings indicated that the displaced persons in Cameroon have a strong sense of solidarity which fosters their psychological health through community satisfaction. The roleand proceses of social integration among IDPs requires further study. Intervention support should continue to foster solidarity among displaced persons to support their community experiences and enhance their psychological health. This study can be used to support IDPs psychological health globally through policies and interventions. Using the findings of this study, global institutions and governments should provideprograms and resources that encourages solidarity and community satisfaction in support of IDPs' psychological health. Mental health promotion, access to educational opportunities, and social support networks may be included among the resources.

Funding

The research received no internal or external funding support.

Author contribution statement

Angwi Enow Tassang: Conceived and designed the experiments; Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Shi Guoqing: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Tosin Yinka Akintunde: Performed the experiments; Contributed reagents, materials, analysis tools or data; Analyzed and interpreted the data; Wrote the paper.

Sayibu Muhideen: Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Stanley Oloji Isangha: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Adekunle Adedeji: Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Taha Hussein Musa: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

Data will be made available on request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Annex 1. Questionnaire measures for the theoretical model

Constructs	Questions	Scales
Psychological Health		Rated on a scale of 1–5
	1 How much do you enjoy life	
	2 To what extent do you fell life to be meaningful	
	3 How well are you able to concentrate	
	4 Are you able to accept your bodily image	
	5 How satisfied are you about yourself	
	6 How often do you have negative feelings such as despair, anxiety and depression	
Community Satisfaction		
	1 It would be hard to find a better area to live in than this community.	1-strongly disagree and 5-strongly agree

(*continued on next page*)

(*continued*)

Constructs	Questions	Scales
	2 I could recommend this community as a desirable place to live	
	3 All in all, this area is an almost perfect place to liv	
	4 If I had to move away, I would look for a community just like this	
	5 I feel safe and satisfied with my community	
Solidarity		
	1 To what extent do you feel concerned about the living conditions of people in your neighborhood	1-Not Much to 5- Very Much
	2 To what extent do you feel concerned about the living conditions of your immediate family	
	3 Do what extent do you feel concerned about the living conditions of people of the community you live in	
	4 To what extent do you feel concerned about the living conditions of your fellow IDPs	
	5 To what extent do you come together to support and help the living conditions of children in poor IDP families	
Social Integration		
	1 Generally I get help with my finances, borrow things and receive favors from my neighbors	1-definitely disagree 2-tend to disagree, 3- indifferent 4-tend to agree 5- definitely agree
	2 How strongly do you feel you belong to your community?	1- Not at all strongly 2-Not very Strongly 3- neutral 4- Fairly strongly 5- Very strongly
	3 Most of the people I communicate with have similar attributes like me	1- less than half 2- close to half 3- half 4- more than half 5- all similar
	4 My community is where people with different circumstance get well together	1-definitely disagree 2-tend to disagree, 3- neutral 4-tend to agree 5- definitely agree
	5 How much can you rely on friends, families or others to solve your problem	1. Never, 2. Sometimes 3. Often, 4. Very often, and 5 always
	6 How often do you feel isolated and lonely in your community	1- always 2 – usually 3-Sometimes 4-hardly ever 5- Never

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