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Validity and reliability of an adapted social capital scale among Indian adults

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Abstract: Social capital has been shown to influence physical and mental health. For accurate measurement of social capital for research and practice, a culturally-appropriate and validated social capital scale is needed for Indian population. This study assessed the dimensionality (nature and number of dimensions) and reliability of a social capital scale adapted from the Global Social Capital Survey (GSCS) questionnaire.

We conducted a cross-sectional survey among 1563 people recruited using cluster sampling of representative households in Chandigarh, India. The eight dimensions of the original GSCS were: group characteristics; generalized norms; togetherness; everyday sociability; neighborhood connections; trust and volunteerism. Internal consistency (reliability) of the scale was assessed using Cronbach's alpha. Exploratory and Confirmatory Factor Analyses (EFA and CFA) were conducted on two randomly divided subsamples using IBM SPSS.

Participants' mean age was 40.1 (SD = 15.6); about half were women (49.3%), and 41% had a college degree. Majority of the participants (83.8%) were living in an urban area. EFA extracted seven dimensions that explained 59.9% of the total variance. In CFA, we tested the six-factor model (retaining all original dimensions

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PUBLIC INTEREST STATEMENT

Social capital refers to social connections one have, and how useful they are to people. Social capital has shown to influence physical and mental health. In India, standardised scales to measure social capital are limited. We adapted a scale from Global Social Capital Survey questionnaire and tested it among Indian adults. We found the scale to have adequate socio-metric properties, which means it correctly measures relevant components of social connections. This scale needs to be tested further, especially to measure the usefulness of interventions to improve social capital.

except volunteerism) with one second-order factor. The final 22-item Social Capital Scale (SCS) had high reliability and acceptable construct validity.

The adapted GSCS questionnaire has adequate psychometric properties and can be used to measure the effectiveness of health promotion interventions on improving social capital. For further refinement, this scale needs to be tested among subgroups that are diverse, for example, in terms of age and socioeconomic status.

Subjects: Education - Social Sciences; Sociology & Social Policy; Social Policy; Social Theory; Social Class

Keywords: Social capital; validity; reliability; physical and mental health; India

1. Introduction

Health is determined both by biological factors and the factors that operate in the physical and social environment in which one lives and work (World Health Organization, 2010). One of the critical social factors is social capital. Social capital refers to networks and relationships that people develop and use throughout the life cycle. Although social capital is not a unified concept, it is a significant predictor of health (Beaudoin, 2009; Kawachi, Kim, Coutts, & Subramanian, 2004; Kim & Kawachi, 2007). While social refers to connecting with people and producing resources jointly, an investment into these and ownership is seen as capital (Baker, 2000). The conception of 'linking social capital', i.e., the role of the state in promoting equity (Szreter & Woolcock, 2004), increasingly appears in public health literature.

Human social networks and relationships are both structural as well as cognitive. Therefore, social capital is an investment into building relationships and networks with trust, faith, and support (Aartsen, Veenstra, & Hansen, 2017; Beaudoin, 2009; Coleman & Coleman, 1990; Putnam, Leonardi, & Nanetti, 2006). While structural social capital (SSC) is an extension and intensity of associational links, the cognitive social capital (CSC) covers the sentiments, beliefs, and values which means the thinking associated with links (Bain & Hicks, 1998). The SSC could be bonding, bridging and linking. Bonding social capital refers to association among similar individuals having similar backgrounds and supporting each other mutually like family, and the bridging capital relates to connections among people who are non-similar having diverse backgrounds. Linking social capital signifies trusting relationships between people from unequal power or authority (Szreter & Woolcock, 2004).

Social capital, depending on certain contexts, can be considered as positive or negative. A gang member may enjoy sufficient social capital because of its gang affiliation, while the gang itself may engage in anti-social activities—resulting in negative outcomes to the society (Corsino, 2013). However, in the context of health promotion, people often follow the health-related practices of their family members or others in the neighbourhood (Carrillo-Álvarez, Kawachi, & Riera-Romaní, 2019), and belonging to a group that has limited social connections, and thus indirectly access to resources, could affect one's health (Flores et al., 2018).

Majority of the literature on social capital measurement is from developed western countries (Fujisawa, Hamano, & Takegawa, 2009). However, social capital and its association with health are somewhat less from Asian and Low Middle economies and more so from India. India is a vast country like a continent, to accurately assess the association between social capital and health, it is imperative to ensure that the internationally-used tools to measure social capital are valid in India as well.

Both comprehensive and short tools (e.g., World Social Capital Assessment Tool) are available to measure social capital, few of these have been validated in lower-middle income countries (Grootaert, Narayan, Jones, & Woolcock, 2003; Harpham, Grant, & Rodriguez, 2004; Krishna &

Shrader, 1999). Given the importance of social capital in contributing to physical and mental health, having a culturally-appropriate and validated tool for the Indian context is crucial.

We attempted to fill this gap by adapting a Global Social Capital Survey questionnaire (GSCS) (Narayan & Cassidy, 2001) developed by the World Bank and which has been tested in Ghana and Uganda. This is a structured tool and broadly covers dimensions that consider nature, extent, and diversity of participation in various types of social organizations and informal networks. The social capital framework developed for the Global Social Capital Survey (GSCS) consists eight domains rooted in structural and cognitive aspects and primarily focus on bonding and bridging social capitals, and a domain on communications is determinant of social capital. These domains help in measuring the group characteristics, including memberships in informal groups and networks; generalised norms; togetherness; everyday sociability; neighbourhood connections; trust and volunteerism. The trust and solidarity domain seeks information on trust in neighbours, key service providers, and strangers, as well as to determine how these perceptions change over time. The sources of information domain concerns with the means by which households receive information and access to communication. The GSCS have all the important domains and is quite exhaustive in measuring social capital.

However, GSCS has not been formally assessed or validated in the Indian population, where there are contextual differences and diversity in relation to history, culture and social norms. Therefore, we conducted this study, among adult men and women residing in urban, rural and slum areas, and assessed the dimensionality and reliability of a shorter social capital scale adapted from the Global Social Capital Survey questionnaire.

2. Methods

2.1. Participants

Between May 2013 and June 2014, we conducted a cross-sectional survey among a cluster sample of 1563 households in Chandigarh, a union territory of India. Chandigarh has a population of around one million; about 80% of the people reside in urban sectors, and 20% live in villages and slums. Conceptually, each of the 63 city sectors represents a self-sufficient entity with space for living, working, shopping and leisure.

The sample size of the study was estimated based on the estimated prevalence of health problems to be 10%, confidence interval to be 95% and design effect to be 1.5, and refusal rate to be 25%. The study participants were recruited from 13 sampled clusters. To cover all types of populations proportionately, 11 clusters were selected from the urban area, one cluster from a rural area and one cluster from slums. Within the selected cluster, households were sampled from each of the sub-sectors. From each of the sub-sector, one house number was randomly selected for the first interview. After obtaining informed consent, a structured questionnaire (Global Social Capital Survey—GSCS) was used by trained graduate interviewers and interviews were conducted in the households. The questionnaire was administered in Hindi and each interview lasted for about 45 minutes. Inclusion criteria were: age between 18 years and above, and capability of providing informed consent. The study protocol was approved by the Institutional Ethics Committee of Postgraduate Institute of Medical Education and Research, Chandigarh, India.

2.2. Key measure

2.2.1. Global social capital survey (GSCS) questionnaire

The GSCS questionnaire was developed by the World Bank for developing countries and was pilot tested in the Republic of Ghana and Uganda in 1998 (Narayan & Cassidy, 2001). Results from these settings revealed that same dimensions emerged clearly in the two demographically dissimilar populations. Characteristically GSCS covers several dimensions that include group and network associations, subjective wellbeing, political engagement, sociability and community activities,

relation with government, identity, violence and crime and channels of communication. These dimensions were derived from several studies: World Values Survey; New South Wales Study Onyx and Bullen (1997); The Barometer of Social Capital, Colombia John Sudarsky (1999); and Index of National Civic Health, USA.

For conducting factor analysis, we used the items from the GSCS that were recommended by (Narayan & Cassidy, 2001), in order to have a parsimonious set of items and number of factors. As the eight domains have a common latent factor of social capital, we wanted to test them together. As these dimensions were measured in different scale measurements (i.e., measured in nominal, categorical or ordinal scales), in order to test them together, we recoded certain items into Likert-type scales. Further, we also created additive indices by combining certain questions and transforming them into ordinal level scale. For example, group membership that originally had 13 variables (such as religious, cultural, and political membership) was collapsed into two indices—group membership (whether the respondents belong to a particular group) and the number of groups (to which the respondents belong).

2.3. Other measures used in the study

2.3.1. Self-rated health

The SF-36, which provides a subjective summary of how individuals perceived health, is a short health survey questionnaire (Ware, 1992), and it has been used across ages, disease, and treatment groups. Therefore, SF-36 was chosen for this study. All the eight dimensions of SF-36 were considered for understanding the association between social capital and self-reported health. In the current study, this SF-36 scale had good reliability (Cronbach's alpha = .95).

2.4. Analyses

Construct validity was examined in two steps using factor analyses of the survey data. First, the sample was randomly divided into two subsamples. An Exploratory Factor Analysis (EFA), using Principal Axis Factoring (PAF) and Promax rotation, was first performed on one subsample using IBM SPSS version-21 to identify the number and nature of factors. PAF was used because responses to most items were not normally distributed (Costello & Osborne, 2005). Promax rotation was chosen to get factors with a simple structure; also, based on the previous literature, factors were assumed to be correlated (Browne, 2001). The decision regarding the number of factors to be retained was determined by a combination of criteria: Kaiser-Guttman criterion (Eigenvalue > 1); and Scree Plot (Cattell, 1966) and information from the prior literature on the number of factors. For this analysis, loading values >.35 were considered as “meaningful loadings”. That is, an item was considered to load on a given factor if the factor loading was >.35 for that factor, and <.35 for all other factors.

Based on the EFA findings and prior literature, a Confirmatory Factor Analysis (CFA) was performed on the second subsample using IBM SPSS AMOS version-22. CFA was used to validate the relationship among factors and between each item and its factor (factorial validity, a form of construct validity) (Bowen and Guo, 2011). A good model fit is usually indicated by a non-significant χ^2 , and by assessing a range of fit statistics. We chose a set of recommended incremental fit statistics (Goodness of Fit Index: GFI; Tucker-Lewis index: TLI; and Comparative Fit Index: CFI), for which values <.90 indicate lack of fit, between .90 and .95 indicate reasonable fit and between .95 and 1 indicate good fit (Tabachnick & Fidell, 2007). We also considered root mean-square error of approximation (RMSEA) as it is also highly recommended given that it takes into account the number of items estimated in the model. RMSEA values are required to be \leq .05 to indicate good fit and between .05 and .08 for reasonable fit (Byrne, 2001).

As suggested by DeVellis, criterion-related validity was assessed by computing Pearson's correlations between SCS (total and seven subscales) and relevant theoretical constructs (e.g., self-reported health). Means and standard deviations (SD) of the scales were calculated based on the

total scores. The internal consistency (reliability) of the scale was examined using Cronbach's alpha coefficient (α) and was considered adequate when $\alpha \geq .70$ (DeVellis, 2017).

3. Results

3.1. Sociodemographics

Participants' mean age was 40.1 (SD = 15.6). About half of the 1563 participants were women (49.3%). More than two-fifths (41%) completed college degree; 11.9% and 14.9% completed higher secondary and lower secondary, respectively; and 9.5% were illiterate. Majority of the participants (83.8%) were living in the urban area and about three-fourths were currently married. About half of them (47.8%) were employed, and 30.3% belonged to scheduled caste or "other backward caste" (see Table 1).

3.2. Number and nature of the factors using exploratory factor analysis

Item-wise descriptive findings are summarized in Table 2. The first subsample size ($n = 712$) and adequate participant-to-item ratio allowed a stable factor solution. A preliminary scan on the correlation matrix indicated the absence of multicollinearity (i.e., all had $r < .8$). The determinant of the matrix was found to be .025 (i.e. $> .00001$). A Kaiser-Meyer-Olkin (KMO) value of .70 suggested that the data were factorable. Besides, all KMO values for individual items (diagonal elements of the anti-image correlation matrix) were well above the minimum necessary value of .5. The Bartlett's test of sphericity $\chi^2 (231) = 8078.98$, $p < .001$, showed that there were patterned relationships between the items.

The initial solution yielded a ten-factor solution by using the Kaiser criterion. However, we chose a seven-factor solution based on Scree Plot and the number of hypothesised factors. The factors extracted were: group characteristics, everyday sociability (two subfactors), trust, togetherness, generalised norms and neighbourhood connections. Two factors originally labelled in EFA as everyday sociability-1 and everyday sociability-2 were combined to form a second-order factor labelled "everyday sociability". Items related to volunteerism did not form as a separate factor nor significantly loaded onto any factors. The refined social capital scale (SCS) included 22 items, after removal of 8 items from the original set included for factor analysis (see Table 3). Seven items did not significantly load on to any of the seven factors: four items on volunteerism, two items on trust on family and village/neighbour, and one item on generalised norms. Removal of one item (everyday sociability) improved overall Cronbach alpha level from .55 to .73, and thus it was excluded. The final seven-factor PAF solution explained 59.9% of the total variance.

3.3. Reliability

The composite reliability of the 22-item SCS was adequate (Cronbach's alpha coefficient = .79). The reliabilities of the subscales too were in the range of .70 to .88.

3.4. Construct validity

Fit statistics for the six-factor measurement model of SCS using maximum likelihood estimation method were found to have a good level of model fit: $\chi^2 (189) = 536.89$, $p < .001$, GFI = .94, TLI = .95, CFI = .95, and RMSEA = .04.

3.5. Correlation between SCS and relevant theoretical constructs

Bivariate analysis revealed a significant positive correlation between social capital and mental health dimensions of self-rated health (.07, $p < .001$), but not between social capital and physical health dimension of self-rated health (.29, $p \geq .05$) (see Table 4).

4. Discussion

We assessed a 22-item social capital scale (SCS) derived from a social capital questionnaire used in GSCS, which was found to be valid in African countries (Narayan & Cassidy, 2001). We found that SCS

Table 1. Sociodemographic characteristics of the sample (N = 1563)

Characteristics	Mean	SD
Age	40.1	15.6
Physical health dimension	1800.6	376.5
Mental health dimension	1172.7	195.1
Social capital total	44.2	10.4
	n	%
Gender		
Man	792	50.3
Woman	771	49.7
Marital status		
Currently Married	1110	71.0
Currently Unmarried	453	29.0
Living Area		
Urban	1310	83.8
Rural	143	9.1
Slum	110	7
Education		
Illiterate	149	9.5
Up to Primary education	197	12.6
Lower Secondary	233	14.9
Above primary to Higher secondary	186	11.9
University/College/More	641	41.0
Others	157	10.0
Occupational status		
Student	184	11.8
Housewife/Unemployed*	501	32.1
Retired/Pensioner	130	8.3
Currently employed	748	47.8
Religion		
Hindu	1299	83.1
Other (e.g., Sikh, Christian)	264	16.9
Caste		
Schedule Caste/Other Backward classes	473	30.3
General	1090	69.7

was valid and reliable for Indian adult population. We are not aware of any published studies from India that have reported a valid multi-dimensional social capital scale for adult men and women in India. This paper contributes to the limited literature on testing and validation of a social capital scale in developing countries.

Social capital is a key social determinant of health and acts as a mediator or moderator of the socio-economic status for an individual (WHO, 2010). The availability of a valid social capital scale will not only help in correctly measuring social capital but will be useful for testing the effectiveness of health promotion interventions that focus on increasing social capital (Villalonga-Olives, Wind, & Kawachi, 2018). It is especially important in developing countries like India, where disease prevention and health promotion has hardly received the attention of policymakers (Dobe, 2012). We hope that our attempt to provide a short valid tool for assessing different dimensions of social

Table 2. Revised Social Capital Scale (SCS)

Code	Scale items	Corrected item-total correlation (r)	Cronbach's alpha (α) if item deleted	Mean	SD
SC1	How many groups or organizations do you belong to?	.32	.53	0.64	1.10
SC2	How many different groups or organizations do you belong to?	.31	.54	0.40	0.71
SC3	On the average, how much money, if any, do you contribute to the groups to which you belong in a month?	.27	.54	0.19	0.63
SC4	On average, how often do you participate in this group's activities in a month?	.36	.53	0.75	1.16
SC5	To what extent do you participate in the group(s)'s decision-making?	.36	.52	0.92	1.46
SC6	Would you say that most of the time people try to be helpful, or that they are just looking out for themselves?	-.14	.56	2.77	0.71
SC7	Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?	-.08	.56	2.72	0.63
SC8*	Do you think most people would try to take advantage of you if they got the chance, or would they try to be fair?	.19	.54	2.87	0.70
SC9	How well do people in your community/village/neighborhood get along these days?	.25	.54	3.39	0.98
SC10	How would you rate the togetherness or feeling of belonging in your neighborhood/village/community?	.22	.54	3.41	0.90
SC11	Eating meals with people outside the home? Who are these people?	.29	.53	1.68	1.30
SC12	Do people visit you at your home? Who are these people?	.28	.53	1.70	1.31
SC13*	Do you get together with a usual group of people to play cards, games, board games? (A) On average, how often in a month? (B) Who are these people?	.24	.73	5.29	9.01
SC14	Who are these people?	.46	.52	1.07	1.30
SC15	36. Do you get together with a group of people to do arts, crafts, or other recreational activities? (A) On average, how often in a month?	.22	.53	1.40	2.36

(Continued)

Table 2. (Continued)

Code	Scale items	Corrected item-total correlation (r)	Cronbach's alpha (α) if item deleted	Mean	SD
SC16	(B) Who are these people?	.29	.53	0.90	1.18
SC17	Do you spend time with people outside your household in other ways, such as doing chores, shopping, talking, drinking or just spending time together? Who are these people?	.16	.54	1.16	1.00
SC18	How likely is it that you would ask your neighbors to take care of your children for a few hours if you were sick?	.14	.54	3.49	1.31
SC19	How likely is it that you would ask your neighbors for help if you were sick?	.29	.54	3.95	0.99
	How much you trust different groups of people;				
SC20*	People in your family	.13	.55	4.74	0.60
SC21*	People in your village/neighbourhood	.26	.54	3.42	1.09
SC22	People from other caste/tribe/race/religion/linguistic ethnic group	.33	.53	2.89	1.20
SC23	Business owners and traders you buy things from or do business with	.29	.53	2.38	1.23
SC24	Village/local government	.29	.53	2.55	1.24
SC25	Judge/court/police	.29	.53	2.52	1.35
SC26	Government services (Education, Health, Electricity, water etc.)	.31	.53	3.35	1.21
SC27*	On average, how many times per month do you volunteer in any community activities?	.12	.55	0.29	0.77
SC28*	In your community/neighbourhood, it is generally expected that people will volunteer or help in community activities?	.34	.53	3.06	0.97
SC29*	People who do not volunteer or participate in community activities likely to be criticized or fined.	-.11	.56	2.27	1.11
SC30*	Do you think MOST people in your community/neighbourhood make a fair contribution to community/neighbourhood activities?	-.37	.57	1.62	0.82

* items removed from the final SCS version

Table 3. Summary of items and factor loadings for principal axis factoring seven-factor solution for the social capital scale (n = 712)

Item	Item description	Pattern Matrix						
		Factor 1 Group Characteristics	Factor 2 Everyday Sociability-1	Factor 3 Trust	Factor 4 Everyday Sociability-2	Factor 5 Togetherness	Factor 6 Generalized Norms	Factor 7 Neighborhood Connections
SC4	Frequency of participation	.93						
SC1	Number of groups	.93						
SC5	Participation in decision making	.84						
SC2	Number of different groups	.82						
SC3	Contribution of money	.42						
SC16	Get together to—do arts, craft (Whom?)		1.02					
SC15	Get together to—do arts, craft (How?)		.71					
SC14	Get together to play cards, games (Whom?)		.38					
SC17	Spend time outside household (Whom?)		.38					
SC24	Trust on village/local government			.75				
SC25	Trust on Judge/court/police			.71				
SC26	Trust on Govt. services			.62				
SC23	Trust on business owners and traders			.48				
SC22	Trust on people from other tribes/castes			.41				
SC12	People visit at home (Whom?)				.97			
SC11	Eating meals outside (Whom?)				.91			
SC10	Togetherness of people					.88		

(Continued)

Table 3. (Continued)

Item	Item description	Pattern Matrix						
		Factor 1 Group Characteristics	Factor 2 Everyday Sociability-1	Factor 3 Trust	Factor 4 Everyday Sociability-2	Factor 5 Togetherness	Factor 6 Generalized Norms	Factor 7 Neighborhood Connections
SC9	How well people get along					.87		
SC7	Trustworthiness of people						.86	
SC6	Helpfulness of people						.85	
SC18	Asking neighbor to take care of sick child							.76
SC19	Asking neighbor help if you were sick							.73
Eigenvalue		3.58	2.41	2.11	2.41	1.88	1.59	1.52

Extraction method: Principal Axis Factoring; Rotation method: Promax with Kaiser normalization; Values in boldface (loadings > .35) indicate the primary factor on which the item loaded; Eigenvalues refer to the rotated sum of squared loadings (initial solutions are not shown here); factors are correlated and thus sums of squared loadings cannot be added to obtain a total variance.

Table 4. Correlations between the six factors of Social Capital Scale (SCS) and self-reported health dimensions (N = 1563)

Scales	Mean (SD)	Cronbach's alpha (α)	Correlation						
			Group Characteristics (5 items)	Everyday Sociability (6 items)	Trust (5 items)	Togetherness (2 items)	Generalized Norms (2 items)	Neighborhood Connections (2 items)	SCS (22 items)
Mental dimension of self-rated health	1172.7 (195.1)	.858	-.017	.085**	.051*	.101**	-.062*	.041	.077**
Physical dimension of self-rated health	1800.6 (376.6)	.950	-.024	.053*	.029	.039	-.046	-.013	.029

Squared correlations are shown in parentheses. *p < .05, **p < .01.

capital will encourage policymakers and program managers to focus on improving those dimensions that are critical in promoting health.

Social capital is produced both collectively (Coleman & Coleman, 1990; Putnam et al., 2006) as well as individually (Bourdieu, 2011). Collective social capital is represented by norms, trust, and social cohesion, and individual social capital is an additional pool of resource that helps an individual to attain specific goals. This adapted SCS measured both collective and individual social capitals.

We found that our 22-item SCS had six stable dimensions: group characteristics, everyday sociability (two sub-dimensions), trust, togetherness, generalized norms and neighbourhood connections. Unlike the validation results of GSCS questionnaire from other countries (Narayan & Cassidy, 2001), contrary to the expectations, four items related to volunteerism (volunteering in community activities; community expectations on volunteering; do not volunteer or participate to be criticized or fined, about other contribution in community/neighborhood activities) did not form a separate dimension nor significantly loaded onto any dimensions. In this study, lack of contribution of volunteerism to social capital could reflect the sociodemographic profile of the sample, nearly three-fourth (67%) of which had migrants from lower socioeconomic class and with participants from diverse cultural and linguistic backgrounds. As Chandigarh is a common capital for two neighbour States and a melting pot of various cultures, prioritising one's survival may supersede concerns for others resulting in low levels of volunteerism. However, in some other settings in India, the volunteerism dimension may still be relevant and can be included in the measurement of social capital.

This 22-item SCS had good psychometric properties, which include high internal consistency (reliability), and good discriminant construct validity. Similarly, we found evidence for criterion-related validity by testing the association between aggregate SCS and explored sub-dimensions of SCS with other relevant scales/constructs (physical and mental health dimensions of self-rated health) and the results were in the anticipated directions. Like many other studies on social capital and self-rated health (Kawachi et al., 2004) a significant positive correlation between social capital and mental health dimensions were found, but the correlation was not significant between social capital and physical health dimension.

Most of the studies from Low and Middle-Income Countries (LMICs) have tested a combination of “structural” (includes the extent and intensity of links with associations) and “cognitive” (perceptions of support, reciprocity, sharing and trust) dimensions (Bain & Hicks, 1998; Harpham, Grant, & Thomas, 2002; Islam, Merlo, Kawachi, Lindström, & Gerdtham, 2006; Krishna & Shrader, 2000; McKenzie, Whitley, & Weich, 2002). However, the stable dimensions of social capital obtained from other studies could be considered to belong to certain distinct types of social capital, which include: “bonding” social capital that refers to connections between people who have similar sociodemographic characteristics; “bridging” social capital that refers to connections between people who primarily have dissimilar sociodemographic characteristics (Gittell & Vidal, 1999; Narayan, 2002); and ‘linking’ social capital that refers to relationships between people across power or authority gradients in a society (Szreter & Woolcock, 2004). The dimensions derived from our SC scale seem to fit into the bonding and bridging social capital types. Two items on trust on family and village/neighbour, and one item on generalised norms were removed as they did not significantly load on to any of the factors extracted.

Even though validation and reliability assessments are mandatory in adapting a tool in a different study setting, most of the studies have used selected dimensions or different items from already existing validated tools. A recent review article on social capital in relation to health in LMIC (Agampodi, Agampodi, Glozier, & Siribaddana, 2015) identified 18 purposely built tools that measure various dimensions of social capital. That review noted that validity and reliability of those 18 tools were reported only in 11 and 8 tools, respectively. None of those tools were from India.

4.1. Limitations

There is a scope for further refining our SCS possibly by including the items that fit into the linking social capital so that it becomes comprehensive in measuring bridging, bonding and linking social capital constructs. Also, that refined scale need to be tested among diverse subgroups (in terms of age, socioeconomic status and geographical/linguistic settings) in India. A key challenge that we faced in assessing the validity was the diverse nature of the response categories and heterogeneity in the item response categories. Further research on social capital in India and other developing countries could examine which type of measurement options (items with binary options—yes or no, or items using Likert type scales) are more suitable in measuring social capital. Social capital has a strong contextual nature therefore, it may not be possible to identify indicators that can be used everywhere.

5. Conclusion

Many studies from high income and low and middle-income countries have contributed to the growing body of social capital literature; however, a wide gap is prevailing between the concept of social capital and its measurement. A very few studies have reported cultural adaptation of social capital measurement in LMICs. This is one of the first studies from India that has reported a validated and relatively shorter social capital scale with adequate psychometric properties. Future research can focus on testing this scale among other regions in India and to understand the perceived usefulness of social capital-based interventions in improving self-reported health status in developing countries like India.

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