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Association of Maternal Social Capital with Nutritional Status of 6 to 24-Month-Old Children Living in Urban and Rural Areas in Laguna, Philippines

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ABSTRACT

Introduction: Malnutrition in young children is often viewed as an outcome of the interactions of dietary consumption, socio-economic, and demographic factors. Social capital is a widely explored subject because of its implications on health and socio-economic factors, but has not gained recognition in its role as a determinant of nutritional status. **Objectives:** The study aimed to determine the association between maternal social capital and nutritional status of 6 to 24-month-old children living in urban and rural areas and to compare the effect of maternal social capital on the child's nutritional status between an urban and a rural community setting. **Methods:** A total of 135 randomly selected mothers were interviewed in selected urban and rural communities in San Pablo City and Municipality of Rizal, Laguna, Philippines. Chi-square and Spearman's test were used to determine the association of variables. Binary logistic regression was used to predict the effect of maternal social capital on nutritional status. **Results:** Levels of maternal social capital were the same in the urban and rural areas (p=0.24) and had a strong association with household food security (p<0.05). In the urban area, maternal social capital was strongly associated with mother's education (p<0.01) and weight-for-age (p<0.01) and height-for-age (p<0.05). In the rural area, maternal social capital was strongly associated with mother's education (p<0.01), ethnicity (p<0.01), marital status (p<0.05) and weight-for-age (p<0.01). **Conclusion:** There is an association between material social capital and nutritional status. Improvements in education and household food security as well as having parents living-in together may lead to better nutritional outcomes as these factors are associated with maternal social capital which in turn affects nutritional status of children aged 6 to 24 months.

Key words: Child care practices, food security, maternal social capital, nutritional status

INTRODUCTION

In early childhood, adequate nutrition is fundamental to ensure healthy growth, proper organ formation and function, a strong immune system, and neurological and cognitive development (UNICEF-WHO-World Bank, 2012). This can be achieved if children have adequate quality food, and sufficient care from their families and communities (Bokeloh, Gerster-Bentaya & Weingartner, 2009). Women who are literate, well informed

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and empowered are in a better position to care for themselves and their children. The mother, being the primary health care giver, has the ability to prevent her child from suffering any form of malnutrition because of her caring capacity (WHO, 2008). Consequently, maternal health and nutritional well-being are essential for every child's health and nutrition.

Malnutrition among young children, in the forms of under-nutrition and stunting, is often associated with inadequate dietary intake and poor economic condition. In the Philippines, malnutrition among young children is still prevalent. The recent national nutrition survey conducted by the Food and Nutrition Research Institute (FNRI) showed that 19.9 % of children aged 0-5 years are underweight, while 30.3% are stunted, (FNRI, 2013). One aspect that is given little attention is the role of social capital in the development of malnutrition. Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions (World Bank, 1999). It is a widely explored subject in developmental studies where it has an important role in poverty alleviation and a positive impact on measures of household consumption and income, as well as in community participation and empowerment efforts (Carrol, 2001; Maluccio, Haddad & May, 2000; Godquin & Quisumbing, 2006). There is no universally accepted definition of maternal social capital. In the context of this study, maternal social capital refers to the social asset of mothers measured with observable proxies like membership in organisations, economic and social network density, attendance and participation in social events, support systems, and exchange of goods and services. In the Philippines, it is documented that Filipinos have a large measure of social capital, as evidenced by active and increasing numbers of non-governmental and people's organisations (Bankoff, 2007). The World Bank is one of the few institutions that has used the concept of social capital to look at economic and societal development (Smith, 2000). Recognising that the causes of malnutrition are multi-factorial, this study is an attempt at elucidating nutritional status from a combined scientific and sociological perspective. In addition to those indicators already established in the literature that was found to be associated with malnutrition such as mother's education attainment, exploring social indicators like social capital might have a positive or negative implication on addressing malnutrition problems. Social capital has been shown to be positively associated with a range of health outcomes, yet no studies have explored the association between maternal social capital and child nutritional status (De Silva & Harpham, 2007).

We hypothesised that maternal social capital has an influence on the nutritional status of children. In addition, that levels and determinants of maternal social capital between urban and rural communities would be different. Thus, this study aimed to determine the social capital of mothers with young children, to determine the association of maternal social capital and their child's nutritional status, and to compare the maternal social capital and nutritional status in rural and urban areas.

METHODS

A cross-sectional study design was employed in this study. The study was conducted in two municipalities, one rural (Rizal, Laguna) and the other, urban (San Pablo City, Laguna). In each area, there were five randomly selected barangays (villages) in San Pablo city and five randomly selected barangays (villages) in the municipality of Rizal.

From the 2012 Operation Timbang (OPT), all children 6 to 24 months old were identified. A total of 413 children aged 6 to 24 months were included in the study

areas. The municipality of Rizal (rural) had 226 children and San Pablo city (urban) 187 children. Using the formula on simple random sampling technique, the computed total sample size per area was 135; 70 children from the rural communities and 65 children from the urban communities.

The data on socio-demographic-economic status and maternal social capital were collected through face-to-face interviews. The questionnaire was pretested and revised prior to the actual survey.

To measure the social capital of mothers, the Short Adapted Social Capital Assessment Tool (SASCAT) developed by Harpham *et al.* (2006) was adapted. The tool included indicators such as: 1) membership in organisations; 2) economic and social network density; 3) attendance and participation in social events in the community; 4) support from individuals or groups; 5) exchange of goods and services; and 6) cognitive social capital. A scoring system was developed with each variable being given corresponding points. A point score of 0-17 meant that maternal social capital was "low"; 18-35 "moderate", and 36-52 "high."

The nutritional status of children was determined using weight-for-age and height-for-age indices. The weight of children was measured using a calibrated Salter weighing scale. The length of children was measured using a wooden height board. Nutritional status was assessed using World Health Organisation's Child Growth Standards (WHO, 2006).

Child care practices were categorised as i) poor, ii) good, and iii) excellent, based on a scoring system developed from assessment of child care practice indicators namely;breastfeeding practices, psychosocial care practices, food processing, hygiene practices and health and environmental practices.

Data gathered were processed using a systematised computerisation method. Preliminary data tabulation and encoding were done using Microsoft Excel program and SPSS statistics 17.0 software for the final data analysis. Data were analysed through descriptive statistics using frequency counts, percentages, means, standard deviations and ranges. Differences between urban and rural areas in terms of maternal social capital were assessed using chi-square test for categorical variables and T-test for continuous variables. Relationships between maternal social capital and nutritional status were assessed using chi-square test of independence. Cramers' V coefficient further measured the strength and direction of association. The significance probability was set at 5% level.

The study protocol was reviewed by the University of the Philippines Manila – Research Ethics Board (UPM-REB). An ethical certificate from the ethics committee was secured prior to the start of the study. Informed consent was sought from the mothers/caregivers.

RESULTS

Socio-demographic characteristics of mothers

Mothers in the rural area were slightly better off than respondents in the urban area in terms of educational attainment, employment status, and household monthly income. However, the difference was not statistically significant. There were a higher number of mothers in the rural area who were married and cohabiting with their partners (91.4%), and slightly younger with an average age of 28.97. Furthermore, in the rural area, there were more mothers who were migrants as evidenced by fewer mothers born within the same municipality (45.7%). However, in terms of length of residency, mothers in the rural area had been in the community longer (19.3 yeas) than mothers in the urban area (16.9 years). In terms of ethnicity, the respondents in both areas identified themselves as

Tagalog. In both communities, mothers belonged to extended type of families, with a comparable average household size of six and at least one child under five years of age within the household. However, in rural households, there were more adults (3.1) than in the urban households (2.8). (Table 1).

Maternal social capital

Moderate level of maternal social capital was common in both urban (75.4%) and rural areas (71.4%), although a high level of maternal social capital was noted only in the rural areas. There were more mothers in the rural (74.3%) than in urban (60.0%) who had organisation affiliations. The most common type of organisation for both areas was credit or cooperative organisations; thus economic benefits mostly in monetary form, was the most common benefit obtained from the organisation in both the rural (83%) and urban (73%) communities. There were more respondents in the rural (74.3%) than in the urban areas (67.7%) who were beneficiaries of government programs. In terms of the benefits derived from the program, it was noted that medical assistance was availed by almost all (94.3%) of the beneficiaries in the rural while a lower number of respondents (77.3%) was observed in the urban. The most common social events attended by the respondents in both areas were celebrations like birthdays, weddings and baptism and other church related activities.

Respondents from the urban area were more aggressive in terms of asking for help from other people especially among neighbours (56.9%), friends who were not neighbours (38.5%), community leaders (52.3%), and politicians (43.1%). Mothers in the rural area on the other hand commonly sought help among family and relatives (82.9%) and government officials (27.1%). In addition, mothers with peer groups were also noted to be more common in the rural (78.6%) than in the urban areas (69.2%).

Nutritional status of children and childcare practices

Based on the WHO-CGS, weight assessment among children revealed that the majority of the children in both rural (88.6%) and urban areas (81.5%) had normal weight-for-age. Among those who were underweight, there were more children from the urban (18.5%) than in the rural areas (10%), but the difference was not statistically significant. Overweight was observed only in the rural (1.4%) area. Although, results indicated that there were more children from the rural than from the urban areas who had normal length-for-age, the difference was not statistically significant. In addition, a comparable number of children from the urban area (18.4%) and rural area(15.7%) had stunted growth; the number of severely stunted children (4.3%) was higher in the urban area.

The majority of mothers demonstrated excellent child care practices. Although, as the study revealed, there were more mothers with excellent child care practices in the urban (70.8%) than in the rural (48.6%) areas. Mothers in the urban area performed better in exclusive breastfeeding (26.2%), timely introduction of complementary food (50.8%) and complementary feeding with breastfeeding (62.9%).

Relationships between maternal social capital and socio-economic and demographic indicators

Maternal social capital was significantly associated with educational status ($p=0.00$) in both urban and rural areas. Further, maternal social capital was significantly associated with marital status ($p=0.03$) and ethnicity ($p=0.00$) in the rural but not in the urban area. It was further observed that maternal social capital in the rural area had a significant association with the type of organisation ($p=0.04$), and the type of assistance received from the organisation ($p=0.00$)

Table 1. Socio-demographic characteristics of the mothers and nutritional status of the children in the rural and urban communities.

Variable	*Urban (%)*	*Rural (%)*
Socio-demographic indicators		
Average household size	6.3	6.0
Average number of children under 5	1.7	1.6
Average number of adults in the household	2.8	3.1
Average age of mothers	29.8	28.9
Average years of residence	16.9	19.3
Average household income	Php10,298.46	Php15,615.71
Household structure (Extended)	57.0	59.0
Marital status (Married/cohabiting)	90.8	91.4
Religion (Roman Catholic)	98.5	84.3
Education (Secondary)	49.2	47.1
Employment (Unemployed)	76.9	60.0
Ethnicity (Tagalog)	76.9	84.3
Birthplace (Within the municipality)	61.5	45.7
Maternal social capital indicators		
Mothers with organisation affiliation	60.0	74.3
Assistance received from the organisation (Economic)	73.0	83.0
Mothers who are beneficiary of government programs	67.7	74.3
Benefits derived from the program (Medical assistance)	77.3	94.3
Social events attended by the mothers in the community		
Medical missions	55.4	45.7
Funeral of a neighbor	75.4	57.1
Support Groups of mothers		
Family/Relatives	80.0	82.9
Neighbours	56.9	44.3
Friends who are not neighbors	38.5	30.0
Community leaders	52.3	25.7
Politicians	43.1	24.3
Government officials	24.6	27.1
Mothers with peer groups	69.2	78.6
Maternal Social Capital Status (Moderate)	75.4	71.4
Nutritional status indicators		
Underweight	18.5	10.0
Stunted	18.4	15.7
Overweight	0.0	1.4
Child's age in months (average)	14.3	16.1
Child's sex		
Male	55.4	51.4
Female	44.6	48.6
Child care practices (Excellent)	70.8	48.6
Exclusively breastfed infants	26.2	15.7
Still breastfed children 6-24 months	47.7	48.6
Timely introduction of solid foods	50.8	32.9
Complementary feeding with breastfeeding	63.1	62.9

Table 2. Summary of the associations of maternal social capital with socio-demographics, childcare practices, and nutritional status indicators in the rural and urban communities

Variable	*Urban p-value*	*Rural p-value*
Socio-demographic indicators		
Marital status	0.98	0.03*
Educational attainment	0.00*	0.00*
Ethnicity	0.71	0.00*
Type of organisation affiliation	0.75	0.04*
Types of assistance received from the organisation	0.39	0.00*
Household food security	0.00*	0.01*
Presence of peer group	0.20	0.00*
Support Groups		
Neighbours	0.03*	0.01*
Friends who are not neighbours	0.00*	0.37
Attendance to social events		
Celebrations of a neighbor but not a relative	0.01*	0.61
Celebrations of a relative	0.00*	0.15
Medical missions	0.04*	0.64
Fiesta celebrations in a nearby barangay	0.00*	0.88
Funeral of a neighbour/not a relative	0.17	0.00*
Child care practices		
Timely introduction of solid food	0.02*	0.94
Timely initiation of breastfeeding	0.01*	0.27
Exclusive breastfeeding	0.04*	0.65
Child's nutritional status		
Weight-for-age	0.13	0.00*
Height-for-age	0.00*	0.01*

Significant at 5% level significance

In terms of support groups, maternal social capital was associated with neighbours (p=0.03), and friends who were not necessarily neighbours (p=0.00) as support systems in the urban areas, whereas, neighbours (p=0.01) as support group was found to be significantly associated with maternal social capital in the rural areas (Table 2).

While maternal social capital had a significant association with attendance at celebrations of relatives (p=0.0) and neighbours (p=0.01), medical mission (p=0.04) and fiesta celebrations (p=0.00) in the urban area, maternal social capital was only associated with attendance at funeral service of neighbours (p=0.00) in the rural area. Presence of peer groups (p=0.00) was significantly associated with maternal social capital in the rural, but not in the urban area. Household food security status was also found to be significantly associated with maternal social capital in both urban (p=0.00) and rural areas (p=0.01)(Table 2).

Relationships between maternal social capital and nutritional status

Using binary logistic regression, it was found that children whose mothers had higher maternal social capital score (they were active members in an organisation with high levels of participation, attended social events, had a high number of peer

Table 3. Summary statistics: Results from regression analysis predicting nutritional status

Variable	*B*	*S.E.*	*Wald*	*Sig.*	*Exp(B)*	*95.0% C.I. for EXP(B)*	
						Lower	*Upper*
Maternal social capital	-0.111	.045	5.949	0.015	0.895	0.819	0.978
Household structure	-0.967	.421	5.286	0.022	0.380	0.167	0.867
Constant	2.595	1.065	5.936	0.015	13.400		

groups, with a high number of support systems and a high network density), had a lower chance of having a poor nutritional status regardless of the type of community they belonged (B= -0.11- 95% CI - 0.89, p=0.15). In addition, children who belonged to an extended family had a lower chance of having a poor nutritional status (B= -0.967- 95% CI - 0.38, p=0.22) (Table 3).

Examining further the association of nutritional status with maternal social capital, it was found that only weight-for-age (p=0.00) had a significant association with maternal social capital in the rural, whereas height-for-age was significantly associated with maternal social capital in both the urban (p=0.00) and rural areas (p=0.01) (Table 2).

Moreover, maternal social capital and nutritional status was significantly associated in the urban (p=0.00) but not in the rural areas (p=0.06). In addition, among the maternal social capital indicators, it was found that in the rural area, type of organisation affiliation (p=0.04) and the type of assistance received from the organisation (p=0.00) were significantly associated with nutritional status. On the other hand, being a beneficiary of a government program (p=0.04) was found to be significantly associated with nutritional status in the urban area.

Among the social events, nutritional status was significantly associated with attendance at fiesta celebrations in other barangays or villages in both urban (p=0.03) and rural (p=0.01) areas. Attendance at funeral service of a neighbour but not a relative also had a significant association with nutritional status in the urban (p=0.02) but not in the rural areas (p=0.51). Help seeking behaviours among support groups during an emergency situation for the care of children was found to be strongly associated with nutritional status in both urban (p=0.01) and rural areas (p=0.01), while help-seeking behaviours among support groups during an economic loss was strongly associated with nutritional status in the rural (p=0.00) but not in the urban (p=0.79) areas (Table 4).

In terms of caring practices, maternal social capital had a significant association with timely introduction of solid food (p=0.02), timely initiation of breastfeeding (p=0.01), and exclusive breastfeeding (p=0.04) in the urban but not in the rural areas (Table 2).

DISCUSSION

Maternal social capital was found to be significantly associated with nutritional status of children 6 to 24 months old. The association indicated that as the level of maternal social capital increased, the nutritional status of the child also got better, in the same manner that a low level of maternal social capital was significantly associated with poor nutritional status. Among the maternal social capital indicators, nutritional status was significantly associated with the type of organisation affiliation, type of

Table 4. Summary of associations between nutritional status and maternal social capital indicators in the rural and urban communities

Variable	*Urban p-value*	*Rural p-value*
Maternal social capital status	0.00*	0.06
Type of organisation affiliation	0.75	0.04*
Types of assistance received from the organisation	0.39	0.00*
Beneficiary of government programs	0.04*	0.74
Attendance to social events		
Fiesta celebrations in nearby barangay/village	0.03*	0.01*
Funeral of a neighbor/ not a relative	0.02*	0.51
Help seeking behaviour for		
Care for the children	0.01*	0.01*
Economic loss	0.79	0.00*

*Significant at 5% level

assistance received from the organisation, and attendance at selected social events.

Similar to the study of Harpham *et al.* (2002), this study showed an association between maternal social capital and nutritional status of children 6 to 24 months old. The relationship of nutritional status and maternal social capital in this study can be further explained by the significant association of maternal social capital to socio-demographic characteristics, specifically food security and childcare practices. Being a member in an organisation, participation in government programs, and attendance at social events in the community allows the mother to acquire social capital that may translate into household food security. The results of the study revealed a strong and significant association of household food security with maternal social capital. In line with the results, Martin *et al.* (2004), highlighted that social capital particularly in terms of reciprocity among neighbours, contributes to household food security. Moreover, Dhokarh *et al.* (2001) reported that food security might be achieved by enhancing supportive networks, which is an important dimension of social capital.

As the study showed a higher level of maternal social capital results in better nutritional status of children. Maternal social capital which is associated with nutritional status can be formed and strengthened with social interactions. Membership in either formal or informal organisations leads to social interactions, which are essential in building social capital. As stated by Putnam (2000), repeated social encounters during group meetings and organisational activities increases the chance of a member to build a "valuable asset" in the form of social capital. As the results showed, there were a significant number of mothers in both urban and rural areas that had organisation affiliations, with peer groups, and nearly all mothers attended social events in their community. As affirmed in the literature, social capital may improve health or nutrition consequences because people are more likely to seek advice from someone they trust (Cox, 1995).

As opposed to the research hypothesis, there was no significant difference in the level of maternal social capital between urban and rural areas. This was also contradictory to the findings of De Silva

& Harpham (2007) that social capital is higher in rural areas mainly because of the existence of traditional social networks and social reciprocity. The similarities in the level of social capital between mothers in the urban and rural areas can be attributed to the similarities of the respondents in their demographic characteristics i.e. educational attainments, marital status, ethnicity, and health seeking behaviours during emergency situations.

As Helliwell & Putnam (1999), emphasised, education is usually the most important predictor of political and social engagements. This can be attributed to the fact that social relationships with other people involves interactions, and higher educational attainment increases self-confidence, thus enabling one to communicate and socialise better than those who are less educated. Educational attainment in both areas was mainly at secondary education level. This may contribute to the assessed moderate level of maternal social capital characteristics of the respondents.

With regard to marital status, maternal social capital was found to be significantly associated with marital status in the rural but not in the urban areas. Related to this result, Hofferth & Iceland (2011) found that families living in rural areas were more likely to exchange exclusively with relatives than families living in urban areas. Respondents who were married and living in the same roof with their partners had higher chances of having more support groups or social networks because they could also take advantage of the social networks of their partners. In relation to the nutritional status of children, Portes & Sensenbrenner (1993) identified how social capital provides advantages such as familial support and opportunity to access economic resources.

Further comparison of the relationships of maternal social capital with respondents' socio-demographic characteristics showed that ethnicity matters in the rural but not in the urban areas. This is similar to the findings of Ziersch *et al.* (2009) that higher levels of networks, civic participation and cohesion were observed in rural areas than in the urban areas. Finally, according to Putnam (2000), people tend to group together in small communities and networks of support such as a neighbourhood that are based on trust, goodwill and common objectives. Social capital allows people to resolve collective problems more easily because people often times are better off if there is cooperation among them (Putnam, 2000). In line with this, during emergency situations, mothers in both urban and rural areas who tend to seek help from their social networks to take care of their young children, turned out to have children with better nutritional status than those mothers who had lesser help-seeking behaviours. Trust is one of the key elements of social capital (Quibria, 2003). This is supported by research results that mothers in both urban and rural areas who have more support groups tend to have children with better nutritional status.

There was a significant association between material social capital and nutritional status. This study clearly showed that children 6 to 24 months old whose mothers were affiliated with any organisation, participated in government programs, attended social events in the community with peers and support groups, and with a high network density, had higher chances of having better nutritional status regardless of whether they lived in a rural or urban area. It is recommended that improvements in education and household food security, as well as parents living-in together, could lead to better nutritional outcomes as these factors are associated with maternal social capital that affects nutritional status of children aged 6 to 24 months.

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