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Review

Toward a social capital based framework for understanding the water-health nexus

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ABSTRACT

In recent years, there has been considerable interest in social capital theory in both research and policy arenas. Social capital has been associated with many aspects of improvements in health, environment and development. This paper assesses the theoretical support for a social capital based analysis of environment and health issues with a focus on the water-health nexus in low and middle income countries. We review conceptualisation of social capital by Pierre Bourdieu in relation to his concepts of "fields" and "habitus" as well as other conceptualisations of social capital by James Coleman and Robert Putnam. We integrate these authors' ideas with ecosocial analysis of social and geographical patterns of access to safe water, adequate sanitation and hygiene and the resulting health impacts. Further, we develop a conceptual framework for linking social capital and health through the water-health nexus. The framework focuses on the role of social capital in improving water-related knowledge, attitudes and practices as well as facilitating collective action towards improving access to water and sanitation. The proposed framework will facilitate critical engagement with the pathways through which social processes and interactions influence health within the context of access to water, sanitation and hygiene in low and middle income countries.

1. Introduction

Access to safe water, considered a basic need and human right by many, is far from reality for many people. Though the millennium development goal on water has been achieved ahead of schedule, an estimated 768 million people still remain without access to improved drinking water within a reasonable distance from home and 2.5 billion lack improved sanitation facilities globally (WHO/UNICEF, 2013). The majority of the global population without access to safe water live in developing regions, specifically in sub-Saharan Africa, Oceania, Southern Asia and South Eastern Asia (WHO/UNICEF, 2013). Aside from huge disparities in access that exist at the global level, similar disparities are found within countries; that is, between the rich and poor and between people living in rural areas and those in urban areas.

A major challenge that remains in many rural areas of low and middle income countries is how to provide cost effective solutions that are sustainable and adequately address adverse health impacts related to lack of safe water and adequate sanitation. Researchers have long identified that barriers to improving access to water and sanitation are not mainly technological but rather social and institutional. For example, with regards to uptake of sanitation and hygiene interventions, common challenges in research are inadequate attention to theories that address strategies of health behaviour change at the individual and community levels (Aboud and Singla, 2012). These barriers are partly reinforced by inadequate understanding of the range of social and institutional barriers that affect success in water interventions from the local to national levels.

In recent years, researchers have associated social capital with many aspects of sustainable development (Krishna and Uphoff, 2002) and improved health (Kawachi et al., 1999; Brown et al., 2006; Araya et al., 2006; Miller et al., 2006; Wood et al., 2012). Evidence has shown that societies with large stocks of social capital are able to better manage resources, have better institutional capacity to promote development and easily adapt health behaviour interventions. However, like any other social theory, social capital has been faced with debates about its substance and utility in health research. Over the past decade, some researchers have raised theoretical and methodological shortcomings about the

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concept and have contested its utility in (health) research (Navaro, 2002; 2004; Lynch et al., 2000). This article examines the theoretical usefulness of social capital by examining its role as a key construct in ecosocial theory. Our review explores current application of social capital to the water-health nexus and highlights possible pathways through which social capital can influence health within the context of access to water, sanitation and hygiene. The water-health nexus represents the intersection at which issues of water, sanitation, hygiene and human well-being meet (Elliott, 2011). The linkages between water and health are potentially influenced by a web of biological, social, economic and political factors. Thus, integrating social capital with ecosocial frameworks holds the potential to increase our understanding of the complex challenges affecting the water-health nexus.

1.1. Water-health linkages

Globally, almost 10% of the burden of disease is attributed to unsafe water, inadequate sanitation and poor hygiene; for example, 1.4 million child deaths each year are caused by diarrhoeal diseases and 88% are attributable to unsafe water, inadequate sanitation and insufficient hygiene (Prüss-Üstün et al., 2008). In addition, one in five children born in low and middle income (LMI) countries die from child malnutrition associated with repeated diarrhoea or intestinal nematode infections induced by unsafe water, inadequate sanitation and poor hygiene before they reach age five (Prüss-Üstün et al., 2008). Detrimental effects of diarrhoea and malnutrition, especially on children are noticed in their growth and cognitive development (Berkman et al., 2002). Aside from diarrhoeal diseases, improved access to water, sanitation and adequate hygiene contribute substantially to reduction in the prevalence of many neglected tropical diseases, such as trachoma, soil-transmitted helminthiases, schistosomiasis, lymphatic filariasis and dengue fever (Prüss-Üstün et al., 2004).

Further, there are numerous adverse effects of lack of water, sanitation and poor hygiene on maternal and newborn health. Specifically, there are adverse impacts resulting from water carrying by pregnant women and hygiene-related infections during and after delivery (Cheng et al., 2011; Watt and Chamberlain, 2011). Additionally, health-care facilities including hospitals, health centres and residential care settings require access to safe water and adequate sanitation to provide clean tools and ensure adequate hygiene practices among care givers to reduce the risk of hospital based infections.

The disease burden and economic impacts resulting from lack of access to water, inadequate sanitation and poor hygiene are central to poverty reduction efforts and development concerns in many LMI countries. For example, the cost of treating waterborne and water related diseases, low productivity resulting from sickness due to unsafe water, productive cost of time spent collecting water, and lack of water for household livelihood activities such as gardening and animal rearing have significant impacts on poverty reduction and community development (Schuster-Wallace et al., 2008). The water-health nexus thus provides fertile ground for synthesis of health and development issues with a focus on reducing inequalities and promoting human health and well-being.

2. Perspectives and definitions of social capital

Over the past two decades, social capital research related to health coalesces around three major perspectives. These perspectives are based on the ideas of Pierre Bourdieu (1986, 1977), James Coleman (1988), and Robert Putnam (1993; 1995). The first major analysis of social capital emerged from Bourdieu's analysis of *forms of capital*. He defined social capital as "the aggregate of actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition" (Bourdieu, 1986: 248). Bourdieu's concept of social capital – and by extension of social capital as a resource – can be understood and successfully employed, by integrating it with his concepts of "fields" and "habitus" (Bourdieu, 1977; Bourdieu and Wacquant, 1996). Fields, in simple terms, may be regarded as structured spaces organised around specific forms of capital or combinations of capitals. As fields, all structured spaces within society are contested; and actors' positions within them have to be fought for continually using various forms of resources at their disposal. Thus, capital (including social capital) mediates processes in fields and is a means by which individuals achieve their social or economic goals (Grenfell, 2009). Further, the concept of habitus is necessary for understanding collective action and practices. Habitus is understood as a "system of lasting, transposable dispositions which, integrating past experience, functions at every moment as a matrix of perceptions, appreciations, and actions and makes possible the achievement of infinitely diversified tasks" (Bourdieu, 1977: 82). Habitus is developed through the process of socialisation, and determines a range of dispositions that influence human behaviour (Navarro, 2006). Such dispositions may influence an individual's behaviour towards collective activities and associational culture.

Further comprehensive analysis and review of other (eg. Putnam's and Coleman's) conceptualisations of social capital already exist in the health literature (Carpriano, 2006; Wakefield and Poland, 2005; Veenstra, 2000; Mohan and Mohan, 2002). Despite the differences in ideas, Bourdieu, Putnam and Coleman seem to agree in one respect: that is, social capital is a *resource* that actors stand to benefit from by virtue of membership in social networks or structures. For the purpose of this review, our analysis of social capital is focused on resources embedded in social networks, structures and relations potentially available to individuals within the networks or the larger community. These resources include composition and practices of local level institutions, both formal and informal, that serves as instruments of community development as well as shared norms, values, attitudes and beliefs that predispose people towards collective action (Krishna and Shrader, 2000). It is important to recognise that macro-level institutions and relationships (eg. political regime, rule of law, property rights, court systems, and political and social liberties) have strong impacts on the development of social capital and generating its beneficial outcomes by creating the enabling environment for local institutions and associations to develop (Grootaert and Bastelaer, 2002).

2.1. Ecosocial theory, social capital and the water-health nexus

Although social capital offers potential insights regarding how social and economic factors influence health, particularly at the neighbourhood or community level (Carpiano, 2006), many researchers have been critical about the theoretical and methodological strengths of the concept (Macinko and Starfield, 2001; Pearce and Davey-Smith, 2003). While some studies have associated social capital with some aspects of improved health (Kawachi et al., 1999; Brown et al., 2006; Araya et al., 2006), others have also found little or no benefits of social capital to health (Veenstra et al. 2005; Mohan et al., 2005) and thus remain sceptical about both investing in social capital and "the explanatory power of social capital (vis-a-vis material circumstances)" (Mohan et al., 2005: 1282). With regards to explaining water-health linkages, integrating social capital with ecosocial theory offers a useful framework for generating a holistic social and biologic understanding of health, diseases and well-being (Krieger, 1994, 2004, 2011).

Ecosocial theory seeks to explain: "who and what is responsible for population patterns of health, disease, and wellbeing, as manifested in present, past, and changing social inequalities in health?" (Krieger, 2011:213). With this explanation, an ecosocial framework presents opportunities to investigate patterns of disease distribution and health by examining the combination of social processes, structures, cultural norms and ecologic settings in any given populations (Krieger, 1994). For example, when applied to water borne diseases, an ecosocial approach may ask whether the factors or processes related to exposure to water-borne diseases are physical, social or biological in nature; or a combination of some/all these factors. Investigations, for example, may extend to ask why and how exposure varies between neighbourhoods, age groups, and ethnic groups. Thus, an ecosocial approach will emphasise how the processes of exposure to water borne diseases, or water interventions to prevent such diseases, cannot be separated from the social conditions in which people are born, live, play, grow and work.

Beyond improving living conditions and reducing income inequalities, public health and policy interventions that foster strong social networks and institutions are relevant for improving health. It is argued that while variables – such as trust and reliance – may not in and of themselves cause mortality or inequalities in health, societies with low stocks of social capital or those that disinvest in social capital may be those that fail to provide social institutions directly or indirectly responsible for the health of their populations (Kawachi et al., 2008). Such institutions may include those responsible for water and sanitation. For example, a study by Levison et al. (2011) in the village of Usoma, Kenya revealed that lack of trust among residents in the community was a major barrier to community initiatives and mobilisation towards addressing water and sanitation problems.

Social capital can also offer some theoretical strength to ecosocial approaches vis-à-vis processes through which social norms and values shape patterns of health. Strong community networks and observance of norms are usually deployed to exert social control and preserve community values. These shared norms may be important forms of – and relevant for building – social capital and are relevant in ecosocial frameworks that seek to understand gender patterns of health in many local communities especially within the context of water provision. For example, in many sub-Saharan African countries, women and girls carry the burden of water collection within households (WHO/UNICEF, 2012). Though this phenomenon (shared norm) creates opportunities for womens' mobilisation and participation in water issues, it has implications for their health that cannot be ignored in attempting to understand gender patterns of health in many rural communities. Aside from calories expended, women are also exposed to diseases such as typhoid fever, malaria, dengue fever, yellow fever and schistosomiasis during water collection (Watt and Chamberlain, 2011). Further, women and children are sometimes victims of assault and sexual abuse while undertaking water fetching roles. These risks disproportionately affect women's health and may shape gender patterns of disease distribution.

Further, ecosocial theory fundamentally seeks to examine health inequalities from within a web of social and biological factors. While inequalities in access to water and sanitation could explain patterns of water-related diseases, social capital may offer explanations to why such inequalities in access exist within cities or local regions in the first place. For example, in a study to assess exclusion from access to water in two Nairobi slums, Mudege and Zulu (2011) observed that community mobilisation and collective action to address water issues was generally lacking due to water conflicts between different socio-economic groups within slums. They observed that socio-economic inequalities even within slums cause struggles for control over the few water facilities available. These struggles inhibit efforts to address more important issues. Thus, interventions to address inequalities in access to water in such communities need to take intra-group conflicts, and factors that hinder community mobilisation, into consideration. Such an example highlights the potential theoretical explanatory power of social capital for understanding what drives success in addressing local water and sanitation issues which have significant implications for patterns of water-related disease distribution and health.

2.2. Embodiment, social capital and the water-health nexus

Embodiment is a core construct within ecosocial theory that seeks to explain the interplay between bodies and the social world. Embodiment, with other ecosocial constructs (pathways to embodiment, cumulative interplay between exposure, susceptibility and resistance, and accountability and agency) can be employed in epidemiological studies to reveal population patterns of health, disease and well-being as biological expressions of social relations and structure (Krieger, 2011). At a general level, embodied epidemiology expresses how living organisms – including human beings – biologically incorporate the material and social circumstances in which they live. Krieger (2005) advanced three critical claims central to the notion of embodiment. First, "bodies tell stories about – and cannot be studied divorced from – the conditions of our existence" (Krieger, 2005: 350). The second claim is that "bodies tell stories that often – but not always – match peoples stated accounts" (Krieger, 2005: 350). Finally, she advances the argument that "bodies tell stories that people cannot or will not tell either because they are unable, they are forbidden, or they choose not to" (Krieger, 2005: 350). Thus, embodiment involves the temporal transformation of bodily characteristics as a consequence of people's engagements with their worlds. For example, deprivation from some of the social determinants of health such as the lack of food, inadequate access to water and sanitation, economic and social deprivation, and inadequate health care temporally transform bodies or leave marks on the body. With respect to water and sanitation, diseases such as schistosomiasis, guinea worm, filariasis, yellow fever, river blindness, trachoma and yaws all leave marks on the body of infected persons which tell stories about their living conditions or state of access to safe water and sanitation. Recognising the importance of socio-political and economic processes in determining epidemiological patterns, embodied epidemiology challenges researchers to understand the different social processes and circumstances that become "embodied" to generate diseases profiles, health and wellbeing.

How do bodies embody social capital within the context of access to water and sanitation? Bourdieu's conceptualisation of social capital in relation to other forms of capital and habitus illuminates how embodied difference in social capital can operate in many aspects of social life. Social norms, values and expectations are reproduced in everyday social relations and subconsciously frame individual identities (Holt, 2008). These individual identities – such as woman/man, disable/able – possess embodied social capital which can (re)produce privileges and exclusion in a variety of ways. Such embodied social capital can generate broader patterns of social and economic (dis)advantages which influences health. For example, many individuals defined as disabled experience marginalisation and exclusion in many aspects of social and economic arenas (Imrie and Edwards, 2007). People with physical disabilities are often excluded from using water points and toilet blocks because they cannot easily access them. They also rarely participate in water and sanitation activities in many local communities.

Further, ideas of embodiment include the notion that observed differences in health status between groups may result from group

relations. For example, socio-economic relations between the poor and the rich may determine how they differentially accumulate privileges or access water resources, which may influence differences in water-related health outcomes. Social capital could further reinforce or reduce such privileges associated with socio-economic divisions. Strong "bonds" among "well-off" actors (eg. wealthy community members with resources, rich individuals, land owners, etc.) may help reinforce inequalities in water-related health outcomes through restrictions and exclusion of people of lower socio-economic status from accessing such facilities and/or resources owned by "well-off" groups.

On the other hand, "bridging social capital" between economically/resource endowed and less endowed groups may be useful for reducing water inequalities. Bridging social capital is explained as diffuse and extensive networks and connections deployed by groups to "get ahead" (Harpham et al., 2002). These connections could be cooperation and connections between the rich and poor, bridging between low-income groups in a community, or bridging between poor and more affluent communities (Warren et al., 2005; Woolcock and Narayan, 2000). Consequently, to the extent that the poor lack broader connections (bridging social capital), they may remain isolated and less capable of improving their water and sanitation conditions and vice versa. Thus, social capital may serve to "bridge" embodied differences in group relations which may help reduce inter group differences in access to water resources and facilities.

2.3. A social capital based framework for understanding the water-health nexus

Empirical evidence from the literature suggests that social capital can be applied to various aspects of the water-health nexus to achieve improved health and well-being. That is, social capital plays a significant role in various aspects of water and sanitation delivery systems.

2.3.1. Sustainability of community based facilities

The success of community-based approaches (involvement of community members in the design, construction and management of water and sanitation facilities) in water and sanitation delivery is influenced by availability of social capital. Application of operational rules and sanctions, participation in community groups, shared norms and interactions among users have been found to be ingredients for collective action that facilitate proper implementation and management of water and sanitation systems (Isham and Kähkönen, 2003). Prevalence of social networks and interactions among community members may also influence their ability to collectively craft and enforce rules for management of water and sanitation facilities. Where water committees and boards are formed to oversee water and sanitation projects, evidence suggests the inability of communities to form effective committees and/or cooperate with them affects the implementation, management and performance of rural water systems (Isham and Kähkönen, 2003).

2.3.2. Management of common resources

Similarly, communities with high levels of trust, shared beliefs and expectations for collective action are more able to mount collective responses to local problems such as watershed management issues. Krishna and Uphoff (2002) gives a classical example of the success of soil and water conservation projects on Common Lands in 864 villages of Rajasthan, India. Committees were formed in villages to oversee the management of Common Land Development Projects, which involved planting trees and grasses, enforcing rules for watershed projects, and fencing common lands against stray cattle and human encroachment. The villages also had to contribute 10% of the cost in the form of labour. Though almost all the villages emphasised the need for the project, programme results varied from village to village. Social capital was associated with better development outcomes, both in watershed conservation management and in cooperative development activities more generally.

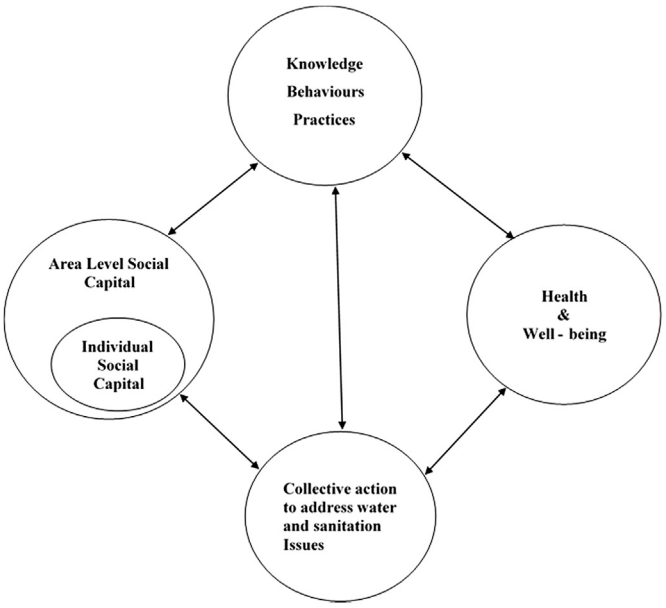

Fig. 1. *Title*: A Suggested Conceptual Framework for Understanding the Pathways between Social Capital and Health within the context of the water-health nexus. *Description*: There are two major pathways linking social capital and health within the context of the water-health nexus. First, social capital can enhance water-related behavioural interventions which can improve knowledge, behaviours and practices (KAPS) around water-health linkages and lead to improved health and well-being. Second, social capital may facilitate collective action towards addressing issues related to access to facilities and/or sustainable management of facilities and water resources etc. Further, there is a feedback mechanism whereby health and well-being influence social capital through the same pathways; that is, KAPs and collective action. The two pathways are not mutually exclusive but continuously interact.

2.3.3. Water related behaviour change

Further, social capital offers theoretical support for research that seeks to explain and understand community water related behaviours and practices. The social environment influences individual water-related behaviour and activities through a number of causal mechanisms by shaping norms, enforcing social control, (not) enabling people to participate in particular behaviours, and constraining individual choices (Institute of Medicine, 2003). Social support and social networks, for example, may enable or constrain the adoption of health-promoting behaviours while social capital may influence the ability to enforce and/or reinforce group or social norms for positive health behaviours and provide tangible support (McNeill et al., 2006).

Social capital is thus considered an important element in water-related behavioural change interventions. Such water-related behaviours may be in relation to water treatment practices, improved hygiene behaviours, and improved sanitation practices. Evidence suggests that networks of social relations, social norms and group participation can influence individual behaviours and practices around water-health as well as promote adoption of water-related behavioural interventions (Wood et al., 2012; Briscoe and Aboud, 2012). For example, in a study to explore women's motivation to adopt, sustain, or discontinue the use of chlorine water products in Malawi, Wood et al. (2012) found family support and encouragement to be a major factor for the continued use of chlorine

treatment methods. Also, financial support and encouragement from husbands, neighbours and extended relations was a major factor among women who continued to treat their water after government stopped free distribution of the treatment products.

2.3.4. Group struggles and differences

Further, social capital, when successfully employed with Bourdieu's concept of field, could serve as a useful framework for understanding facilitators or barriers to collective action for solving water problems at the community level. As fields are dominated with struggles for power and resources, policies aimed at building social capital to address water and sanitation issues within a particular field can be problematic if actors within compete or struggle amongst themselves for resources or power. The study by Mudege and Zulu (2011) in Nairobi slums found that intra-community struggles between households of different socio-economic status negatively affect community mobilisation and collective action to address water issues. Thus, power relations and economic differences within various communities are major factors that can influence interventions that seek to build social capital for collective action towards addressing water-related challenges.

The benefits of social capital on individual and population health flow through a number of pathways (Scheffler and Brown, 2008). From the above discussions, there are two major pathways that link social capital and health within the context of the water-health nexus in LMI countries. These pathways are shown in Fig. 1. First, social capital can enhance the implementation and diffusion of water-related behavioural interventions (Briscoe and Aboud, 2012; Wood et al., 2012). These interventions can improve knowledge, behaviours and practices (KAPs) around water-health and lead to improved health and well-being. Second, social capital may tend to facilitate collective action towards addressing water and sanitation issues (Krishna and Uphoff, 2002; Isham and Kähkönen, 2003). These could be in areas related to improved access to facilities and/or sustainable management of facilities and water resources etc. Further, the framework has a feedback mechanism whereby health and well-being influences social capital through the same pathways; that is, collective action and KAPs. Individuals or populations with good health or better living conditions are more likely to adapt water-related behaviour interventions or undertake collective actions to improve their access to safe water and adequate sanitation. The two pathways discussed above are not mutually exclusive but continuously interact. Improved KAPs may motivate collective action to solve water and sanitation issues. At the same time, collective action in water-related activities may influence changes in KAPs.

2.4. The macro context

Though our concern is with social capital as a resource for understanding water-health linkages at the community level, investment in social capital may be ineffective if we do not pay particular attention to macro level social, political and economic processes (Pearce and Davey-Smith, 2003). Water resources ownership, management and water-related pollution are sometimes products of economic and political processes beyond the control of local communities. Social capital under such circumstances may be a useful construct when employed together with theories such as political ecology of health in order to connect large-scale political, economic and social processes to local health and wellbeing with the context of water (Mayer, 1996). Further, decisions related to how water resources are used or managed are influenced by decision-makers and actors with unequal power relationships, authority, and different economic interests. These decisions have consequences for access to safe water for communities in many instances. Thus, engaging with broader issues of power, scale, globalisation are equally important in understanding access to water and sanitation. Though engaging with the macro-level presents an opportunity to understand local environmental and health issues within the framework of external political and social forces, extending the lens to examine how communities manage, cope, or respond to these issues may require some theoretical explanations from social capital.

Further, inequalities in access to safe water and sanitation in many LMI countries are sometimes a reflection of broader inequalities in society (eg. inequalities in incomes and living conditions). As mentioned earlier, there are wide inequalities in access to water both between urban and rural areas and between rich urban areas and urban slums. Understanding these inequalities requires engagements with institutional, political and economic processes that are key determinants in deciding who gets access to water and at what price. Aside from these disproportionate inequalities in access that affects poor areas, some visible minorities and vulnerable populations are excluded from access to safe water and sanitation due to socio-political factors. Thus, the framework proposed above cannot be applied out of context but in relations to maro-level factors which determine access to water and influences (dis) investments in social capital.

2.5. Some methodological issues in operationalisation of social capital

Though social capital provides a theoretical lens for understanding how social processes and interactions affects the success of water and sanitation interventions, there are numerous acknowledged methodological ambiguities in its measurement and operationalisation (Lynch and Davey-Smith, 2000; Navaro, 2004). Resolving these methodological challenges may strengthen the application of a social capital based theory in analysis of health and environment/development issues. A fundamental point of contention in the public health literature is whether social capital ought to be considered an individual or group phenomenon. The idea that people can invest in relationships and get beneficial returns in future makes consideration of social capital at the individual level close to its original analogy with more "traditional" notions of capital (economic, cultural, and symbolic capital). Most health studies, however, adopt a communitarian view of social capital in line with the ideas of Putnam (1993). Such studies regard social capital as a neighbourhood, community or regional resource (Subramanian et al., 2003; Veenstra et al., 2005; Wakefield et al., 2007). However, there seems to be general agreement that social capital can be measured at either the individual or area unit depending on one's conceptualisation and research questions (Kawachi et al., 2008; Harpham, 2008).

Further, translating social capital into valid and reliable measures has proven to be a difficult task over the years. In health literature, indicators such as trust, reciprocity, formal and informal networks, perceptions of social control, and civic participation, have all been used as measures of social capital (Harpham, 2008; Cattell, 2001; Campbell and McLean, 2002). Though trust has been a dominant indicator of social capital in many studies, some researchers have argued that an individual's perception of trust can either be a precursor of social capital or a consequence (outcome) of it, but not actually a part of social capital itself (Lin, 2001). While it is difficult to dismiss such an argument, trust in itself can facilitate collective action or inure to the benefit of those who possess it and therefore could be a valid measure of social capital.

In ecological studies, various community-level indicators have been proposed as indicators of social capital. These indicators include paid newspaper circulation, congregation size and

participation in other church related organisations, trade union membership, number of and participation in voluntary organisations, number of blood donations, voter turnout, donations to charities, participation in sporting clubs, savings clubs, parent–teacher associations (De Silva et al., 2006; Putnam, 1995). The extent to which such indicators adequately measure social capital remain contested (Mohan and Mohan, 2002) especially as they may be culturally specific and thus limit comparability. Issues of intra-group power struggles have also been large largely ignored when using such indicators.

While the methodological issues discussed above may affect the measurement of social capital, it is feasible to achieve some form of balance between theoretical relevance and construct validity and reliability in health related studies. A wide range of lessons are offered in the literature (Harpham, 2008; Harpham et al., 2002; 2005; Whitley, 2008; Krishna and Uphoff, 2002; Kawachi et al., 2008). One proposal is for researchers to adopt a mixed-methods (quantitative–qualitative) approach incorporating a broad range of tools to both explain the mediating role of social capital as well as generate in-depth understanding of contextual measures of social capital.

3. Conclusion

This paper emphasises that despite the criticisms of social capital, it is a concept that has potential theoretical value to enhance understanding of inequalities in health outcomes and highlight the pathways through which poverty and environmental issues affect health. Importantly, social capital can illuminate differences inherent in collective efforts towards improving the physical environment. Further, the paper emphasises the role of social capital as a key construct in ecosocial theory. Within the context of the water-health nexus, such a conceptualisation serves to reconnect the lack of access to water and sanitation and the resulting health impacts with factors that hinder or facilitate community efforts in addressing such challenges. Thus, a social capital based theoretical analysis of issues related to improving access to water and sanitation and promoting KAPs around water and sanitation within the context of LMI countries is important for both research and policy. Generally, it is also important to (re)emphasise engagement with social theory in environmental health research in order to improve understanding of how social processes affect human health as well as inform the design of theoretically informed health behavioural interventions.

A critical assessment of the different definitions of social capital and methodological application of the concept suggest that policy application of social capital cannot be done in isolation from its theoretical background. There is some danger that current policy discussions, which focus on the beneficial aspects of social capital among groups or community members without addressing differences in status, interests and resources (struggles within fields) may yield minimal results. Further, attempts to build social capital may require an approach that fosters the development of macro level structural institutions that facilitate and encourage civic engagements as well as associational culture. This is more likely to achieve collective action in LMI countries. Further, key areas of future research include creating understanding of social and environmental factors that drives long-term use and sustainability of water and sanitation interventions. Also, there is a fertile ground for researchers and development practitioners to engage in theoretically informed community hygiene behaviour change interventions that are embedded within existing social structures (Aboud and Singla, 2012).

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