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The Chronic Care Model (CCM) and the Social Gradient in Health

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Abstract

Health is unevenly distributed across different social groups and the burden of chronic diseases falls disproportionately on people with lower socioeconomic status. Evidence-based health care services can mitigate the negative impact of chronic diseases at societal and individual level. However, the quality of care received by chronically-ill patients is also shaped by their socio-economic status with people from lower socio-economic groups receiving less preventive and curative care than their better-off counterparts. Several authors have argued that the social gradient in health is partly the result of a deficit in the quality of care. The Chronic Care Model (CCM) is an evidence-based policy response devoted to improving the quality of chronic care at the level of primary care. It has been implemented in several Western societies to decrease the morbidity and mortality associated with chronic diseases. The initial evaluations have shown that it is efficient and can also mitigate the social gradient in health. However, the pathways through which it acts on the social determinants of health have not been analysed in detail. In this paper we outline the materialist-structuralist and social capital pathways, described in the literature, through which social determinants shape the social gradient in health. We show that the CCM could mitigate the social inequalities in health by increasing the level of social capital at the level of health care systems. However, it does not act on the materialist and structural causes of the health inequalities and this may raise a significant concern that in the absence of other social policies it may actually increase the social inequalities in health.

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Introduction

Chronic diseases are pervasive globally and their burden falls disproportionately on people with lower socio-economic status (WHO/NMC/CCH., 2002). Socio-economic status is predictive for heart diseases, stroke, diabetes, depression and cancer and multiple studies have revealed (Adler and Stewart, 2010) that individuals with lower socio-economic status have a higher morbidity and premature mortality associated with these diseases. Thus, in the last decade inequalities in health between socio-economic groups have become of concern for most societies (Adler et al., 2002a). Significant advances regarding the prevention, diagnosis, monitoring and treatment of chronic diseases have been made. Despite these advances, evidence-based health care for chronic conditions is not the norm in most health care systems (IOM, 2001, Schoen et al., 2006, WHO, 2002).

The Chronic Care Model (CCM) has been developed as an evidence-based policy response to this practice gap. It (*fig. 1*) uses a multi-pronged strategy which takes into account multiple factors such as: the continuous relationships of patients with their care team; individualization of care according to patients' needs; care that anticipates patient needs; and services based on scientific evidence and cooperation among clinicians (Wagner et al., 2001).

The CCM involves linking health care systems with the communities in which the model is implemented, via the organisation of health care services. It aims at improving the clinical and functional outcomes of disease management through productive interactions between informed, activated patients and prepared, proactive practice teams of clinicians and other healthcare professionals (Bodenheimer et al., 2002b, Wagner et al., 2001, Wagner et al., 1999). These productive interactions are deemed to result from the integrated implementation of the six components of this model. Figure 1 briefly describes these components. Health care organization and linkages with community resources and policies, at the top level, are prerequisites for the next four components – delivery system design, decision support, support for self-management, and clinical information systems – on which health care teams should focus (Epping-Jordan et al., 2004, Bodenheimer et al., 2002b, Wagner et al., 2001, Wagner et al., 1999).

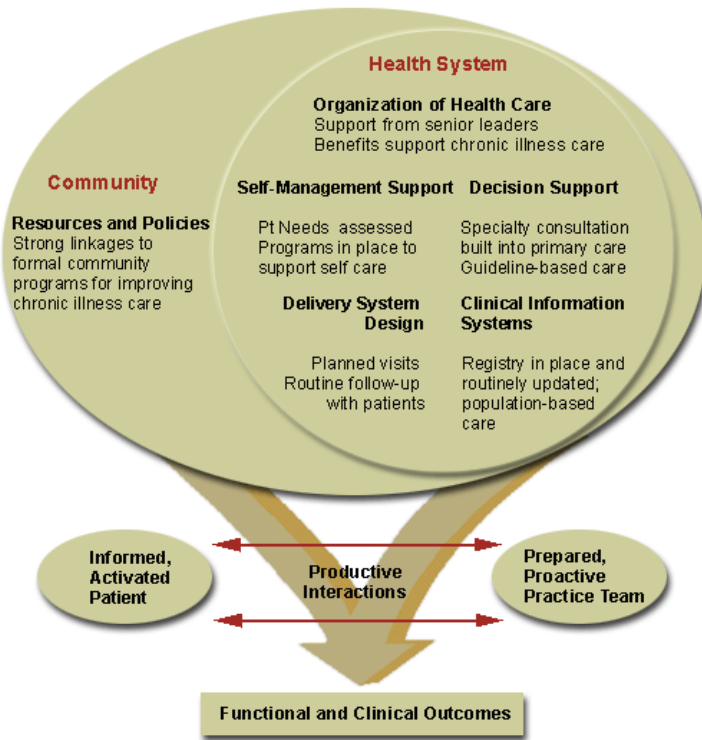


Fig 1. *The Chronic Care Model (Wagner, 2004, Wagner et al., 2001)*

The model has been implemented, partially or as a whole, in a large number of health care organizations in the United States, the United Kingdom, Sweden and some developing countries (Bodenheimer et al., 2002a, Bodenheimer et al., 2002b, Bodenheimer et al., 2002c, Holman and Lorig, 2000, Shoor and Lorig, 2002) and recommended by the World Health Organization (WHO) for health care systems worldwide (WHO/NMC/CCH., 2002, Epping-Jordan et al., 2004). The changes advocated by the CCM are wide-ranging and focus on changing the environment of health care systems. The CCM has been used by the Health Disparities Collaborative (Chin et al., 2007, Martin et al., 2007) and other health care organizations (Franks and Fiscella, 2008) with the aim of improving the quality of care and of decreasing the health inequalities. Although there is evidence that the CCM is efficient (Wagner et al., 2001), the evidence on the impact of this model on the social gradient in health (Franks and Fiscella, 2008, Chin et al., 2007, Martin et al., 2007), is contradictory. A further analysis of the mechanisms through which the CCM may act on the social determinants of health may help us understanding

this contradictory evidence. This paper examines the pathways through which the CCM may address the social determinants of health. First, we outline what is known about the pathways through which socio-economic status influences people's health. Second, we analyse how the changes promoted by the CCM address the social gradient in health.

Social gradient in health - Pathways

Although there is strong evidence that socio-economic status (SES) highly influences the health of chronically-ill patients, the pathways through which these social determinants act upon people's health and their relative influence on people's health are less well understood. In this section we outline the main pathways through which socio-economic status is deemed to influence people's health. We also describe the debate between the materialist and social capital interpretations of the epidemiologic evidence, emphasizing their policy implications.

Debates about socio-economic, racial and ethnic inequalities in health have become especially prominent in the last decade, particularly due to the increasing evidence that inequalities are positively associated with morbidity and mortality rates between and within countries (Adler et al., 2002a, Pearce and Davey Smith, 2003). There is agreement that the economic development of a society does not automatically translate into better health for all people and that social policies devoted to influencing these social determinants are required to decrease social inequalities in health. Several pathways through which these social determinants may act on people's health have been described. Generally these pathways fall into two main explanatory categories: (1) materialist; and (2) social capital explanations (Adler et al., 2002a, Kim & Kawachi, 2006).

The materialist explanation interprets the differentials in health between different socio-economic groups by starting with structural and material causes of inequalities (Pearce and Davey Smith, 2003). There are several direct and indirect pathways through which material resources influence people's health. First, there is a direct effect of education, income and occupation on people's health (Adler et al., 2002a). For instance, education shapes future occupational opportunities and equips people with basic life skills. People with better education have more access to informational resources that promote health and have better health literacy, leading to being better equipped to understand, integrate and act upon this information. In the same way, income provides the means to purchase health care, and to have access to better nutrition, housing or educational opportunities. Although a more complex determinant, occupational status has a direct influence on people's health. Low skilled persons who are poorly compensated or the unemployed persons have poorer health status (Adler et al., 2002a).

Material and structural factors also influence people's health in indirect ways (Adler et al., 2002a). For instance, people with lower socio-economic status are more affected by the physical environment and receive poorer health care. Associations between socio-economic status and environmental exposure to damaging physical agents have been shown (Adler et al., 2002a). People with lower socio-economic status live in poorer neighbourhoods, in conditions that may be overcrowded, exposed to pollution and without recreational areas. Access to health care is also shaped by socio-economic status. In the US 40% of those who did not graduate from high school are uninsured as opposed to only 10 % of college graduates (Adler et al., 2002b). Even among those with health insurance, or in countries where there is universal health care coverage, the utilisation and the process of health care is highly influenced by socioeconomic status (Pincus et al., 1998). For instance, lower socioeconomic status is associated with less preventive care, less ambulatory specialist care and less hospital care (Crawford et al., 1994, Derose et al., 2007, Fiscella et al., 2000). The pathways through which socioeconomic status influence the process and utilization of health care described in the literature, have included health care affordability, transportation, education, knowledge, level of literacy, patients' self-management skills, as well as competing interests such as caring for others or work demands (Baker et al., 1996, Bao et al., 2007, Crawford et al., 1994, Derose et al., 2007, Fiscella et al., 2000, Nerenz et al., 2006, Schillinger et al., 2006).

In contrast to the materialist explanation of health inequalities linked to SES, the social capital account describes complex psychosocial pathways through which socioeconomic inequalities affect people's health (Adler et al., 2002a, Kuper et al., 2002, Pearce and Davey Smith, 2003, Singh-Manoux A Fau - Marmot and Marmot, Wilkinson Rg Fau - Pickett and Pickett, 2007). As well as absolute material deprivation, people's perceptions of relative inequality shape their health in a negative way (Wilkinson Rg Fau - Pickett and Pickett, 2007). For instance, Kawachi (Kim and Kawachi, 2006, Kim et al., 2007) has shown a direct association between social capital - defined as those features of social organizations such as the extent of interpersonal trust between citizens, norms of reciprocity and density of civic associations that facilitate cooperation for mutual benefit - and health. Isolation and lack of engagement in social networks have been identified to be strong predictors of poor health. Communities with higher cohesion and higher levels of social capital have lower rates of overall mortality. In contrast, protective factors associated with social capital stem from its capacity to promote social integration through various forms of social support, emotional support and provision of information. Even in the specific remit of health care organizations, inequalities in health care have been attributed to lack of trust between patients and doctors (Bonds et al., 2004, Fiscella et al., 2000). For instance, low levels of health literacy are associated with lower trust in health care providers and, thus, with lower adherence to therapeutic plans (Paasche-Orlow and Wolf, 2007).

Following the same logic, another line of epidemiologic research has shown that job strain and lack of control over work are strong predictors for chronic diseases and shape unhealthy behaviours such as smoking, high fat diet or sedentary life-style (Marmot, 2005, Marmot, 2001a, Ishizaki et al., 2001). In addition, scholars have shown that perceived low position in the social hierarchy and racial discrimination, irrespective of income, produce negative emotions such as shame and distrust, which translate into poor health (Gregorio et al., 1997; Wilkinson, 1994, Wilkinson and Marmot, 1992). The hypothetical mechanism for all these associations is that these social tensions decrease social cohesion and social capital which in turn leads to negative emotions that create chronic stress and, through psycho neuroendocrine mechanisms, affect people's health in a negative way (Marmot, 2005; Marmot, 2001a).

These different interpretations of the evidence have prompted a debate in the literature, fuelled especially by the different policy implications of structural materialist and social capital theories. The proponents of materialist interpretations argue that any explanation of the social gradient in health should start with general structural and material factors. They have argued that psychosocial explanations allow that health inequalities may be understood without reference to material conditions of day to day people's lives and that this is mistaken because people's psychological experiences occurred within the material world that pre-existed them (Lynch et al., 2000, Pearce and Davey Smith, 2003). These critics also claim that an emphasis on social cohesion in public policies would be dangerous, due to the fact that strong social cohesion may be associated with enhanced social coercion, and may lead to victim blaming attitudes thus limiting the effectiveness of public health policies (Lynch et al., 2000, Pearce and Davey Smith, 2003). Their alternative neo-materialist theory explains the effect of psychosocial factors as the result of material deprivation and consequence of macro-level forces (Lynch et al., 2000, Pearce and Davey Smith, 2003).

The proponents of the social capital interpretation of the social gradient in health do not reject the effect of material resources on people's health; rather, they emphasize the role of symbolic factors such as level of control over life (Syme, 1998), insecurity, racism and social isolation for people's health independent of material deprivation (Marmot and Wilkinson, 2001, Shavers and Shavers, 2006, Marmot, 2001b). They have underscored the need for inter-sectorial policies to reduce the social gradient in health, focusing on meeting both people's material and symbolic or psycho-social needs (Marmot, 2005).

From our perspective these two lines of explanation are not contradictory but, rather, they complement each other and both may inform health policy. Although there is strong evidence that material factors shape the social gradient in health, there is no evidence that beyond a certain level of wealth these inequalities disappear (Vladescu and Astarastoe, 2012a; Vladescu and Astarastoe, 2012b;

Vladescu et al., 2010). For instance, the Whitehall studies (Marmot et al., 1991) have shown that there is a gradient in health between all social groups along the social scale in the absence of material deprivation. Racism and discrimination can harm people's health irrespective of other determinants including income (Gee, 2002). Thus, it seems that both material and symbolic factors are relevant for people's health and shape the social gradient in health. Next, we analyse the pathways through which the CCM could influence the social determinants of health and to which extent it may decrease the social gradient in health.

CCM and the Social Determinants of Health

In this section, we analyse how the CCM could influence the social determinants of health care services and health more generally. We show that the CCM changes the primary care environment with the aim of improving the clinical performance of health care organizations and the utilization of health care services by patients. Both goals are reached by acting on the social determinants of health through the social capital pathways. We argue that the model may be of greatest benefit for people at greatest risk for ill-health. However, these are only theoretical arguments and further empirical evidence is required.

The approaches of the CCM suggest that this model could act on the social determinants of health in ways that draw on social capital explanations. The main expectation of this model is to increase patients' self-efficacy, or in other words, patients' confidence that they have the cognitive and affective abilities to manage their illnesses (Bodenheimer, 2003; Bodenheimer, 2005; Bodenheimer, 2008). It does this in several ways. First, the implementation of information technologies at the level of primary care practice, promoted by the CCM, may function to enhance people's sense of control over health care environment as well as people's sense of engagement with others. The implementation of information technologies at the level of primary care has the role to increase the effectiveness of health care utilization by patients through systemic patient-centred approaches (Wagner et al., 2001, Wagner et al., 2005, Wagner et al., 1999). In the CCM specialty care is integrated with primary care, and the care of people with chronic diseases is ideally provided by a multidisciplinary team whose skills and competencies are determined by the needs of patients in different stages and phases of care. Information technologies are used as an infrastructure to expand the clinical information basis of health care professionals and to facilitate the cooperation between health care professionals at the level of care. Electronic medical records (Wagner et al., 1999) and disease registries (Wellington, 2001) form a common infrastructure for all health care professionals in an organization, which provides comprehensive medical information about each patient as well as population data. Thus, primary care physicians have a broader understanding of patients' medical

conditions and therapeutic recommendations (Epping-Jordan et al., 2004, Bodenheimer et al., 2002b, Bodenheimer, 2003) and this increases their capacities to provide evidence-based services. However, there is no evidence to date that the implementation of information technologies at the level of primary care, in the way the CCM does, increases the level of social capital and decreases the social gradient in health at a community level. Further research is necessary to evidence this effect.

Second, the CCM attempts to improve the self-management skills of chronically-ill patients. The “support for self-management” component of this model advocates that health care organizations should put in place programs to support self-care (Wagner et al., 2005; Bodenheimer et al., 2002a). Using the Stanford model of self-management, the model promotes patients’ health agency. (Holman and Lorig, 2004; Bodenheimer et al., 2002a; Lorig and Holman, 2003) Education for self-management aims to develop patients’ self-efficacy – the confidence that patients can master the required knowledge, skills and attitudes to achieve their therapeutic goals - by using cognitive and behavioural techniques (Lorig and Holman, 2003). Education for self-management has two parts: (a) patients learn problem solving skills, useful to identify problems from their own standpoint, and use action plans to find solutions; and (b) these skills are applied to medical, social and emotional aspects of chronic illnesses (Bodenheimer et al., 2002a; Bodenheimer et al., 2002b; Bodenheimer et al., 2002c; Wellington, 2001; Tyreman, 2005). Although, this component is devoted to improving the self-management skills of all the patients it could be argued that the main beneficiaries of this component would be patients from socially disadvantaged groups. It is known that lower SES is associated with lower self-management skills and lower desire to participate in health care decisions (Brock, 2000).

Third, at the level of clinical encounter CCM attempt to promote patients’ self-efficacy (Oprea et al., 2010) via collaborative care (Bodenheimer et al., 2002a) between physicians, patients and their families. Collaborative care is based on the premise that patients and physicians have equal expertise. Physicians are experts in diseases, whereas patients are experts in their own lives (Bodenheimer et al., 2002c). Patients have to define their own therapeutic goals, peculiar to their own situations and values, and to take the responsibility to achieve them. Integrating health related goals into patients’ specific circumstances and supporting patients’ life plans may increase patients’ self-efficacy and their internal motivation to pursue therapeutic plans and, thus healthy behaviours (Bodenheimer et al., 2002a). These approaches suggest that the CCM may lead to improved communication and stronger relationships, and thus enhance interpersonal trust between health care providers and their patients. This is an important policy issue because lack of trust in health care providers is associated with poorer health outcomes and distrustful doctor patient relationships are particularly encountered between patients with lower socioeconomic status and their health care providers (Saha et al., 2003) .

Similar effects on interpersonal and collective trust may occur for people with lower health literacy (Paasche-Orlow et al., 2006). The proponents of CCM have argued that cultural competency should be health systems' property, acting under the precautionary principle and, thus, being the norm and, not only the exception for people with low health literacy (Paasche-Orlow et al., 2006). For instance, it has been stated that due to increasing complexity of health care systems and therapeutic recommendations, precautions should be taken with all patients, irrespective of their social risk, that they have understood what they have to do with respect to their medical conditions. It has also been argued that in places where there is growing racial, ethnic or linguistic diversity, a plan to increase the diversity of health care teams, is necessary (Paasche-Orlow et al., 2006). This approach has been advocated due to evidence that health literacy, which is lower in some racial and ethnic groups (Derose et al., 2007, Paasche-Orlow et al., 2006), is associated with higher distrust of health care providers as well as a lower desire to be involved in medical decisions (Paasche-Orlow and Wolf, 2007). In addition, there are also studies showing better health outcomes due to enhanced trust when there is racial concordance between health care providers and patients (Fiscella et al., 2000, Bao et al., 2007). Although not all studies have found evidence about the association between low literacy and distrust, (Dewalt et al., 2007) it could be argued that this association may depend on the social and historical context of each specific community. Thus, at least in certain communities this approach could mitigate some of the racial and ethnic inequalities in health. In addition, these changes could directly promote health by expanding employment opportunities for some disadvantaged racial or ethnic groups.

Fourth, CCM, through its linkages with community's resources and policies, could increase the level of social capital at a community level. For instance, the involvement of patient-support groups in self-management education programs could also act as a resource for social reintegration of chronically-ill patients with disabling conditions (Von Korff et al., 1997). The model also encourages patients' participation in the development of health care systems at both, individual and collective level (Von Korff et al., 1997). One of the functions of clinical information systems is to allow patients to provide feedback to their health care providers and, to contribute directly to the development of health care systems. Additionally, the model promotes the collaboration of health care systems with patient advocacy groups that press for increased access to care (Von Korff et al., 1997). These participative approaches suggest that the model could enhance the collective trust in health care systems and, social cohesion at the community level. Thus, they could reduce the social gradient in health beyond what is usually considered to be in the remit of health care services.

So far we have argued that the CCM could mitigate the social inequalities in health mainly by increasing patients' self-efficacy. It could do so by increasing the level of social capital in the remits of health care systems where it is implemented and to some extent behind the remits of health care systems. We have also shown that these are only theoretical arguments that require further empirical evidence. However, the CCM does not influence the structural and material causes of the social inequalities in health. Most of its actions stop at the practice level and do not influence in any way patients' SES which is a powerful determinant of health inequalities. This issue raises a significant concern regarding the capacity of CCM to influence the social inequalities in health. Although, we have argued that CCM may be particularly beneficent for people belonging to lower socio-economic strata because they are particularly deficient in self-management skills there is no evidence to date showing that people from lower social strata are the main beneficiaries. It may also be possible - especially in the absence of other social policies devoted to mitigate the impact of SES on communities health - that patients' belonging to upper social spectrum will benefit more than their worst-off counterparts and thus, increasing in fact the social inequalities in health. Further evidence on the impact of CCM on different social groups may respond to this concern.

Conclusion

In this paper we have identified how the CCM addresses the social determinants of health. In the first section of this paper we outlined the components of the CCM and showed that it relies on multiple strategies to improve the health outcomes of people with chronic diseases. We showed that the CCM could act on the social inequalities in health by increasing the level of social capital in the remits of health care systems and beyond. We have argued that, although CCM acts non-discriminatory on people from the entire social spectrum it could be of particular benefit for socially disadvantaged patients who are in need of self-management skills, health literacy abilities and trusting doctor-patient relationship. However, CCM does not influence the materialist and structural causes of health inequalities. We have argued that this could raise a significant concern to whether CCM may actually increase the health inequalities in health – especially in the absence of other social policies devoted to mitigate the impact of SES on community health - by benefiting especially people from upper social spectrum. Further evidence on the impact of CCM on the health of different social groups may help clarifying this concern.

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