A Population Health Approach to Clinical Social Work with Complex Patients in Primary Care

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Chronic diseases disproportionately occur among people from disadvantaged backgrounds. These backgrounds correlate with poor health in adulthood. Capacity for patients' to collaborate in their care tends to be lower than among other patients, leading to inefficient uses in medical services and higher risk of adverse events. In the course of this study, social workers engaged patients with increased inpatient and emergency department (ED) use and barriers to self-management, and evaluated them for lifetime exposure to material disadvantage and violence. Intervention focused on creating a primary care team that improved patients' self-efficacy, increased locus of control, and improved capacity for engagement. Results include a 49 percent decrease in admissions and a 5 percent decrease in ED utilization with significant cost savings. Authors recommend further study to analyze social, clinical, and financial risk in a larger sample, which may yield information about a health care provider's most at-risk patients for early targeted intervention.

KEY WORDS: *chronic illness; clinical social work; population health; primary care; social determinants*

Chronic disease occurs disproportionately among people from materially and socially disadvantaged backgrounds (Felitti et al., 1998; Kumari, Head, & Marmot, 2004; Lawlor, Frankel, Shaw, Ebrahim, & Smith, 2003; Marmot, 2005; Walker et al., 2011; Yu & Raphael, 2004). Regardless of how socioeconomic status (SES) is measured, the correlation between SES and health is invariably positive and is often described as a continuous gradient (Kristenson, Eriksen, Sluiter, & Starke, 2004). In the practice described in this article, social workers evaluate complex patients in the primary care setting and address their needs using a framework integrating evidence from the social determinants of health (SDOH) and adverse childhood experiences (ACE) studies.

SDOH compromise one's health gradient. This gradient includes disadvantages in material and environmental living conditions imposed by poverty, particularly in utero and during early childhood (Poulton et al., 2002; Shonkoff, Boyce, & McEwen, 2009). Also included are unmediated stress and its health impact from living in these conditions as well as the biological embedding of early disadvantage (Krieger, 2005; Kristenson et al., 2004; McEwen, 1998, 2000; McEwen & Gianaros, 2012). Compounding these SDOH are reduced levels of material and social supports in societies with high levels of income inequality (Kristenson et al., 2004; Kumari et al., 2004; Pickett, 2009).

Compelling evidence from research resulted in SDOH being acknowledged by the World Health Organization (WHO) Commission on Social Determinants of Health as "solid facts" (Wilkinson & Marmot, 2003; WHO, Commission on Social Determinants of Health, 2008). In other words, where gradients in wealth and power exist, gradients in health result. The "cumulative impact of sustained economic hardship" reflects on health and is linked among adults to decline in physical, cognitive, psychological, and social functioning (Kuh & Ben-Shlomo, 1997, p. 34).

The cumulative impact concept is characterized as a "chain of risk" (Ben-Shlomo & Kuh, 2002). This chain of risk is a life trajectory in which exposure to one established risk factor increases the probability of heightened susceptibility for another, "so that as the number and/or duration of exposures increase, there is increasing cumulative damage to biological systems" (Ben-Shlomo & Kuh, 2002, p. 287). Markers of accumulating disadvantage tend to cluster, as also noted by researchers examining the impact of ACE on adult

doi: 10.1093/hsw/hlw013

health outcomes (Anda, Croft, & Felitti, 1999; Anda et al., 2006; Bonomi et al., 2008; Felitti et al., 1998).

The ACE literature links the extent of childhood exposure to abuse and chaotic, violent households with gradients in susceptibility to adult chronic illnesses (Anda et al., 1999; Edwards, Anda, Gu, Dube, & Felitti, 2011; Felitti et al., 1998). Williamson, Thompson, Anda, Dietz, and Felitti (2002) linked body weight and obesity in adults to self-reported histories of multiple abuses in childhood, thus establishing a potential link between these experiences and adult onset diabetes and other chronic illnesses. ACE literature supports the notion of a dose–response correlation between exposures and health as a gradient.

Siegrist and Marmot (2004) extended the discussion of SDOH through their analysis of the impact of "negative psychosocial environments" on health. *Psychosocial environment* is defined as "the sociostructural range of opportunities that is available to an individual person to meet his or her needs of well-being, productivity, and positive self-experience" (Siegrist & Marmot, 2004, p. 1465). Put differently, to what extent is the impact of a negative psychosocial environment a structural barrier to the development of a functional self and to what extent does it affect or impair active participation in decisions affecting one's life? The sociostructural limitations of an environment permeated by material disadvantage, income inequality, and exposure to family chaos and violence confine potential development of self-efficacy and self-esteem, two attributes linked directly to health (Bandura, 1985; Siegrist & Marmot, 2004).

Exposure to a poor psychosocial environment and its damage to a person's self-esteem and sense of self-efficacy are associated with heightened feelings of hopelessness and helplessness (Kristenson et al., 2004). Such feelings are also described as "negative outcome expectancies and loss of coping" (Kristenson et al., 2004, p. 1518). These psychosocial developmental injuries become vitally important to the design and delivery of chronic illness care, especially its prerequisite for self-management of care. Simply put, patients cannot self-manage chronic illness if they do not, first, have a functional sense of self.

Because all forms of chronic illness care require self-management for lifestyle changes and medication compliance, self-efficacy becomes a vital component for understanding progression of disease, comorbidities, and medical outcomes. Bandura (1985) defined *self-efficacy* as a person's belief that they have the capacity and competence to define and accomplish specified tasks. Self-efficacy is directly related to one's intrinsic sense of control. Kristenson et al. (2004) concluded that "a major obstacle for the introduction, acceptance, and compliance with the new rules for a healthy lifestyle is the feeling of helplessness and hopelessness" (p. 1516). The people most likely to accumulate multiple morbidities are also the repository for the psychosocial characteristics most likely to obstruct effective disease self-management.

Poverty, income inequality, and family violence can be seen as incubators for multiple risk behaviors and related adult onset chronic illnesses (Krieger, 2001). McEwen (2000) referred to the cumulative physiological impact from material disadvantages and negative psychosocial environments as allostatic load, or "the price the body pays for being forced to adapt to adverse psychosocial or physical situations" (McEwen, 2000, p. 174). Inadequate stress response has also been linked to patients' difficulties with psychosocial life and negative expectations for the future (Kristenson et al., 2004).

Population-specific interventions for disadvantaged people, particularly from backgrounds with ACE, are required to prevent, delay, or control the onset of debilitating complications (Centers for Disease Control and Prevention, 2002; Rose & Hatzenbuehler, 2009; Stellefson, Dipnarine, & Stopka, 2013). Collaborative care has evolved as a form of best practice for chronic illnesses; however, the interdisciplinary models are not population specific (Bodenheimer, 2002). They have not been revised, delivered, or measured with regard to population-specific, multifaceted needs of people from significantly disadvantaged backgrounds. As such, they bypass the SDOH associated with people at highest risk.

Population-specific collaborative care combines patient-centered care with social work management to create a practice in which patients disadvantaged by the SDOH and ACE factors can become active participants in their care (Epstein, 2000; Stewart et al., 2000). Patients are empowered to become "co-producers" of their care, which is a prerequisite to improved outcomes (Holman & Lorig, 2000; Yu & Raphael, 2004). This new role differs significantly from improving patients' compliance as better "consumers" of medical treatment regimens. Self-management of care cannot simply be ordered as one component in a prescribed medical regimen for this population.

The patients with elevated exposures are medically more complex and behaviorally and psychologically more vulnerable. They are increasingly isolated from supportive relationships. They are inexperienced in envisioning themselves as hopeful, valued people with an elevated feeling of self-efficacy and self-esteem—the prerequisites for proactive human agency to address current problems. The exigencies of daily life have limited their capacity for a "future-oriented," goal-based framework. This can obstruct their responses to routine self-management activities and may also interfere with lifestyle changes that are essential components to positive health outcomes. In light of the information presented here, the subpopulation could include people identified through instruments assessing exposure to SDOH/ACE as particularly vulnerable because of their harsh material and negative psychosocial backgrounds.

METHOD

This pilot study was conducted at Maine Medical Partners Family Medicine, an academic family practice center in Portland, Maine, from 2011 through 2014 and was approved by the Maine Medical Center Institutional Review Board. Our study design was an interventional practice model created to address the needs of patients who have uncontrolled complex chronic illnesses and the highest level of service use (four or more hospital admissions within the past 24 months). Patients with increased service use and known barriers to self-management were identified by referral or through patient panel data generated for service use outcomes.

Once patients were identified, the social worker contacted the patients' current primary care provider (PCP) and, if applicable, other care team staff such as a nurse, medical assistant, pharmacist, and care manager to participate in the care team meetings. These initial team meetings without the patient present created opportunities for providers and staff to discuss a patient's case and create a plan to introduce the intervention to the patients. The most effective engagement occurred when patients were introduced to the social worker by their provider during clinic visits. If the patient was interested in the service, the social worker would meet with the patient individually. Each patient was given informed consent and was administered a Harsh Living Index (HLI) survey to assess their level of SDOH and ACE exposures. The HLI is a composite of 15 questions chosen by the researchers based on review of SDOH and ACE research. These 15 questions cover a broad range of SDOH and ACE exposures (see Appendix at the end of the article). Each question was weighted equally with a score of 1 indicating positive exposure and 0 indicating the absence of exposure (possible scores would range from 0 to 15).

With exposure information, we were able to assess potential psychosocial impairment in an effort to understand how best to empower patients to engage in their care. As the literature suggests, patients who have high exposures and concurrent pyschosocial correlates of low self-efficacy, low self-esteem, and decreased internal locus of control possess an impaired capacity to participate in self-management. For these reasons, our practice attempted to contradict the harm that has been done to people in inequitable relationships and worked to restore and build the sense of self that is necessary to manage one's care.

Standard primary care is designed to encourage individuals to become better consumers of medical care and is based, in part, on the notion that chronic illness care will improve as the functional ability of the patient to be a better consumer improves. Our model operates on the belief that we must first seek to improve the psychosocial correlates that lead to helplessness and hopelessness so that psychobiological change can take place and be sustained. We posit that being consumers of medical care does not improve health within this population, but rather that it is the production of health through relational connections designed to introduce people to the idea of being coproducers of their own health that improves health.

We work to increase patients' capacity for participation by developing consistent, validating relationships focused on increasing patients' control over their bodies. Building capacity for self-focused concern about each patient's medical challenges, all identified by the patient, is the intention of our initial contact. This occurs through dialogue with patients about their self-defined medical issues, which are then co-constructed into patient-centered plans for health.

Economic hardship and material deprivation along with exposure to violence and chaos often continue to create daily barriers for patients. They may struggle with constructive daily routines and with maintaining consistent productive health care regimens. Our social work practice therefore extends beyond the medical management to that of case management and counseling. As we develop relational connections with patients, we aim to create a safe and empowering environment in which patients can discuss sensitive issues and barriers, and address aspects of their lives that are affected by their exposure to poverty, violence, or trauma.

We approach counseling through the lens of Herman's (1997) trauma theory. The foundation of forming connections with individuals who have experienced trauma is building a sense of personal safety and validity. In our practice, the sense of validity is introduced by acknowledging the absolute merit of each patient's lived experience and self-defined medical concerns. This is the beginning of the patients assuming control of their bodies, a direct link to our interest in strengthening their internal locus of control. The plan for health continues to be shaped and refined with these concerns woven into the initial plan for health.

Essential to the model's success is extending the primary relationship and initial health planning to multidisciplinary primary care teams. Care teams include (but are not limited to) PCPs, nurses, nurse care managers, pharmacists, community case managers, and social workers. Our integrated clinic has taken steps to shift the culture in family medicine from one of providers working independently to a care team culture that meets with the patient in a team setting. Shared medical visits, which specifically require care teams to work in a true integrated multidisciplinary fashion as opposed to working as professionals who are "co-located" and sharing a patient, are an essential aspect of the care team work. These visits give opportunities for multidisciplinary teams to encourage patients to be the drivers of their care and to minimize system errors and barriers.

Once patients and social workers have created a plan of care, multidisciplinary care teams meet together with patients in shared medical visits. These clinic visits promote mutual dialogue and comprehensive communication, and help the care team plan effectively—with patients as activate members of their care rather than consumers of treatment. Each team member, including the patient, leaves the visit with instructions that are directly related to patients' plan for health. To prepare for each meeting, the social worker identifies a list of patients' medical concerns and how to present them to the team, participates as support for the patient in presenting the concerns, facilitates patient interaction with team staff, and then debriefs with the patient after each meeting. Debriefing with the patient consists of reviewing how the patient has authored the discussion with the team and helped to shape the care plan. Social workers would also accompany patients to specialist visits and home visits, and integrate those interactions back into the primary care team and patient's plan for health.

For the purposes of this analysis, we tracked the number of inpatient and emergency department (ED) encounters for the 12 months prior to the intervention and for the 12 months postintervention. Potential cost savings were calculated using average data for inpatient and ED costs at our institution.

RESULTS

Over the course of the pilot program, a total of 18 patients were enrolled in the program; however, due to the longitudinal nature of the project and the lengthy time it takes to develop trusting relationships with this specific population, only outcomes for those patients engaged in the intervention for a minimum of 12 months will be discussed. Twelve of the original 18 patients met the required length of engagement; seven were female and five were male. The mean age was 52 years, and all of the patients were white. Eleven patients were insured and lived in secure housing; one patient was uninsured and homeless upon entering the program (see Table 1).

HLI score for the 12 patients ranged from 5 (17 percent; $n = 2$) to 13 (8 percent; $n = 1$) (see Table 2). Results of the overall composite score, specifically an observed minimum score of 5, reflect the theories outlined in the literature as discussed and support the need for further inquiry with a larger sample to understand the potential for a threshold score.

The number of inpatient encounters decreased from 98 preintervention to 50 postintervention (49 percent decrease), including at all HLI score levels (range: 40 percent to 65 percent decrease). ED visits decreased overall from 66 to 63 encounters (5 percent), although participants at three HLI levels showed increased ED use. Cost savings were approximately $107,808 per year derived from reductions in inpatient admissions and ED visits combined. No apparent association was present between HLI score and inpatient or ED reductions; this may be due to our small numbers and to the overall high and similar HLI scores among our participants.

In addition to quantitative data, we found improvements in patients' quality of life. Qualitative measurements included ensuring that basic needs were met. We worked with patients to secure safe, affordable housing; addressed issues of food security; and helped secure clothing and cold weather gear. We decreased

Table 1: Characteristics of the Study Population ($N = 12$)

Demographic	*n*	%	*M*	Range
Gender				
Male	5	41.7		
Female	7	58.3		
Age (years)			49.9	36–64
White	12	100		
Insurance				
Commercial	1	8.3		
Medicaid	10	83.3		
None	1	8.3		
Housing				
Secure housing	11	91.6		
Homeless	1	8.3		
Income source				
Employed	0	0		
Disability income	12	100		
Harsh Living Index exposures				
Emotional abuse/neglect in childhood	11	91.7		
Physical abuse in childhood	11	91.7		
Insecure housing in childhood	10	83.3		
Current income less than childhood	10	83.3		
Current monthly income <$1,000	9	75.0		
Worried about food/housing in childhood	9	75.0		
Witnessed abuse, violence, neglect in childhood	9	75.0		
Parent was problem drinker during childhood	9	75.0		
Sexual abuse in childhood	7	58.3		
Current or former smoker	7	58.3		
Started smoking at age <16	7	58.3		
Started drinking at age <16	6	50.0		
Currently a problem drinker	5	41.7		
Family member in jail in childhood	3	25.0		
Family member at mental institution in childhood	2	16.7		

Table 2: Distribution of Harsh Living Index (HLI) Score and Corresponding Service Encounters Pre- and Postintervention ($N = 12$)

Total HLI Score			Number of Inpatient Encounters			Number of Emergency Department Encounters			Total
Score	*n*	%	Pre-intervention	Post-intervention	% Change	Pre-intervention	Post-intervention	% Change	Estimated Savings ($)
5	2	17	20	7	–65	7	6	–14	29,351
9	4	33	45	25	–44	24	32	+33	37,372
10	1	8	12	6	–50	4	10	+150	8,274
11	2	17	6	3	–50	12	4	–67	13,113
12	2	17	5	3	–40	3	5	+67	2,758
13	1	8	10	6	–40	16	6	–63	16,940
All patients	12	100	98	50	–49	66	63	–5	107,808

Notes: preintervention encounters = 12 months prior to intervention; postintervention encounters = 12 months after the intervention.

social isolation by facilitating connections to community resources such as long-term counseling and case management and helped patients create sustainable social relationships in their communities. By decreasing social isolation and helping patients improve interpersonal skills, we helped create a system of support and improved sense of self-worth and validity.

CASE STUDY

Linda was a 62-year-old white woman living in a rented apartment with her physically and emotionally abusive boyfriend. She had a significant history of familial chaos, poverty, and emotional and physical abuse. She survived childhood sexual assault, domestic violence, and familial and personal alcoholism and heavy tobacco use. Linda had many medical and social ailments, including eight chronic illnesses; she took 31 medications and was not engaged with her primary care team. Linda had difficulty with self-management and often stated that none of her providers listened or were able to help.

Linda was referred to the social work team after a psychiatric admission for mixed medical issues with severe alcohol use and concerns of suicidality. We worked to transfer control of Linda's health plan through empowering, validating relationships and found that this process became an effective antidote to a lifetime of harsh living. We learned that empowering Linda to be a producer of her care plan's focus and direction rather than being a passive recipient or consumer charged to comply with medical treatment was an effective way to achieve positive medical outcomes and decrease service use. Furthermore, consistent messaging from the entire team helped Linda to remain clear, stay focused, and feel supported.

One illustration of this learning reflects the merit of shared medical visits. Often, providers and patients are frustrated by their lack of mutual understanding. For example, Linda expressed frustration that her health care provider was not curing her of persistent ailments while her provider was frustrated that Linda was not compliant with treatment plans. In shared medical visits, the social worker provided context and information and identified major barriers in patient–provider communication.

Linda had consistent chronic obstructive pulmonary disease (COPD) exacerbations and expressed frustration that she was always short of breath, which her provider had failed to cure. Through mutually trusting dialogue, the social worker learned that Linda did not understand that she had a chronic illness that required self-management rather than a medical cure. Given her health state, her symptoms would likely not improve and may even worsen. The provider was also unaware that Linda did not have this basic medical understanding of chronic illness. As a result, Linda often experienced increased panic and anxiety around her chronic symptoms of COPD and went to the ED for treatment. Her chronic symptoms were then experienced and treated like acute exacerbations.

Once the primary care team, including Linda, developed a baseline understanding of her physical symptoms and health plan, the team created a list of Linda's symptoms of COPD and anxiety. With little variation, we found that symptoms for both were nearly identical: shortness of breath, chest tightness or palpitations, chest pain, constipation, belly pain, dizziness, sleep disruption, and weight gain.

The primary care social worker was in a unique position to help the provider understand how Linda had embodied her exposures and provided feedback regarding the best plan for effective differential diagnosis and treatment associated with Linda's health plan. The social worker also worked with Linda in pre and post shared medical visit conversations to process complex medical information and to eliminate barriers to self-management.

As primary care social workers, we are also interested in service use patterns for each patient. This often includes helping both patients and providers better understand the concept of inappropriate service use versus appropriate and necessary service use, which is critical to managing and caring for chronic illness. Our goal is to differentiate between unavoidable admissions and ED visits (when patients are experiencing illness that requires medical attention) and avoidable admissions and ED visits (breakdowns in communication, breakdowns in self-management, or breakdowns in the management of behavioral symptoms). Once identified, we work with providers to create common, easily understandable language and proper techniques for communication of patients' chronic illnesses. With patients, we work to support self-management and identify the differences between emotional and physical symptoms resulting in decreases in inefficient service use.

CONCLUSION

Limitations

Limitations of this study include sample size and study design. Although the results of our intervention were promising, a larger cohort would be necessary to support our findings. Although the literature supports the content of the HLI questionnaire, it still needs to be validated.

Implications and Recommendations

Research supports the effectiveness of social work integration in primary care. From the literature, we know that patients with high exposure to SDOH and ACE develop chronic illness and behavioral adaptations that make it difficult to engage in traditional health care services. We posit that patients with the highest medical and social vulnerability require a population-specific social work intervention in primary care to achieve positive medical outcomes and to decrease inefficient use of services, especially inpatient admissions and ED visits.

For further study, we see the potential benefit of approaching this work from a population health perspective. Analyzing the level of social, clinical, and financial risk for the entire patient population could yield information about the most at-risk patients who may benefit from population-specific social work intervention. We recommend targeting allocation of resources and measuring outcomes. **HSW**

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Original manuscript received October 15, 2014
Final revision received April 27, 2015
Accepted May 13, 2015
Advance Access Publication March 7, 2016

APPENDIX: HARSH LIVING INDEX QUESTIONNAIRE

1. Was there a time in your childhood when you did not have secure housing?
2. Is your current monthly income below $1,000 per month?
3. Is your current income about the same or lower than your family's income during your childhood?
4. During your childhood, were there times when you worried whether you would have food or housing?
5. During your childhood, did you experience emotional abuse or neglect?
6. During your childhood, did you experience physical abuse?
7. During your childhood, did you experience sexual abuse?
8. During your childhood, did you witness someone else's experience of abuse, violence, or neglect?
9. During your childhood, was a family member ever sent to jail?
10. During your childhood, was a family member ever sent to a mental institution?
11. Are you now or have you ever been a regular smoker?
12. Were you less than 16 years old when you started smoking?
13. During your childhood, did you think of your parent or guardian as an alcoholic or problem drinker?
14. Do you think of yourself as an alcoholic or problem drinker?
15. Were you less than 16 years old when you started drinking?