Influencing Self-Reported Health Among Rural Low-Income Women Through Health Care and Social Service Utilization: A Structural Equation Model

TIFFANY BICE-WIGINGTON

Stephen F. Austin State University, Nacogdoches, Texas

CATHERINE HUDDLESTON-CASAS

University of Nebraska, Lincoln, Nebraska

Using structural equation modeling, this study examined the mesosystemic processes among rural low-income women, and how these processes subsequently influenced self-reported health. Acknowledging the behavioral processes inherent in utilization of health care and formal social support services, this study moved beyond a behavioral focus by shifting attention to the affective and cognitive processes within the mesosystem. Findings from this study demonstrate that behavioral processes alone did not have a direct significant effect on self-reported health problems over time. However, by shifting attention to the affective and cognitive processes, a missing link between service utilization and future reported health emerged.

KEYWORDS rural, low-income women, health care access, formal social support, health disparities, intersetting knowledge, multisetting participation

Research demonstrates that the incidence, prevalence, morbidity, and mortality rates for disease in rural populations is significantly higher than in the general population, leading to disparities in health among rural residents (Gamm, Hutchison, Dabney, & Dorsey, 2003). Further, among rural populations, the susceptibility to health problems and overall well-being

Address correspondence to Tiffany Bice-Wigington, School of Social Work, Stephen F. Austin State University, P.O. Box 6104, SFA Station, 420 East Starr Avenue, Nacogdoches, TX 75962. E-mail: bicewigit@sfasu.edu

differ by gender and socioeconomic status (Centers for Disease Control and Prevention, 2000). Women living within the context of rural poverty confront multiple interrelated challenges to their health and well-being. Limited health and social services infrastructure, higher rates of poverty, lower rates of employer health insurance coverage, and a systemic lack of health care providers (Merwin, Snyder, & Katz, 2006) all contribute to the health disparities characteristic of the rural low-income population.

Although improvement in health care access is a central goal across rural communities (Gamm et al., 2003), in isolation these efforts are likely to have limited impact on health outcomes. Research suggests that only between 3.5% and 10% of health outcomes are accounted for by the actual delivery of health care (Hartley, 2004; Williams, 1990). Put in other words, a minimum of 90% of health outcomes must be explained by something other than health care delivery. This suggests that bridging the gap to access will only partially affect the health disparities experienced among rural low-income women. Therefore, understanding the contextual influences on health outcomes among rural low-income women is particularly salient for social work practice, as well as program development.

CONCEPTUAL FRAMEWORK

Building upon what is known about health inequalities from a medical model approach, the predominant framework for examining health disparities, this study provides insight into the contextual influences on health outcomes among rural low-income women through an ecological systems perspective (Bronfenbrenner & Morris, 2006). This perspective provides a holistic understanding of health and well-being, as individuals and the environment are viewed as a unitary system within a particular cultural and historical context (Germain & Gitterman, 1996). Exchanges between individuals and the environment are seen as reciprocal, where influence and change is a fluid process occurring across several layers encompassing societal norms, values, institutional structures, interactions between families and systems, and the family system itself (Bengtson, Acock, Allen, Dilworth-Anderson, & Klein, 2005; Bronfenbrenner & Morris, 2006).

In an effort to understand the contextual influences on health outcomes, we focused on two major components of an ecological model: the microsystem and the mesosystem. The *microsystem* refers to the immediate context of an individual, involving person-to-person interactions and relationships where an individual expresses behaviors, intrapersonal characteristics, and participates in bidirectional interactions (Tacon, 2008). From within the microsystem, the individual is conceptualized as the “primary link” that establishes the existence of the mesosystem. The *mesosystem* represents the interrelationships between settings, providing the connection between

structures present in one's immediate microsystem (McIntosh, Lyon, Carlson, Everette, & Loera, 2008; Tacon, 2008). Mesosystems permeate everyday processes through the relationships between individuals, families, and community components.

Despite their description as conceptually discrete phenomena, the boundary between the microsystem and mesosystem was theorized, in this study, to be quite permeable. McIntosh et al. (2008) proposed that the mesosystem actually emerges through behavioral, affective, and cognitive processes of individuals. These processes represent transitory mesosystem experiences allowing individuals to recall interactions and apply them in subsequent mesosystem and or microsystem experiences. In essence, the processes blur the boundary between the two ecosystem levels, creating the mental mesosystem, thus influencing the context of the individual. These mesosystemic processes are observable behaviorally as multisetting participation, as well as affectively and cognitively as *intersetting knowledge* (McIntosh et al., 2008).

The purpose of this study was to assess how contextual factors influence self-reported health problems between Time 1 and Time 2 by examining the mediating effects of multisetting participation and intersetting knowledge among rural low-income women. This study examined two hypotheses. First we hypothesized that multisetting participation would mediate the amount of self-reported health problems over time; secondly that intersetting knowledge would further mediate the relationship above and beyond the mediation that occurred through multisetting participation in turn reducing self-reported health problems overtime.

LITERATURE REVIEW

Multisetting participation entails an individual's physical behavior in two or more microsystem settings (McIntosh et al., 2008). For example, multisetting participation might entail an individual engaging in a support group, volunteering at a child's school, and the utilization of local services. The impact of multisetting participation is measured in the frequency of utilization and by the interactions that occur within the setting. Of interest in this study is the utilization of health care and formal social support services among rural low-income women. Research by Cochran, Skillman, Rathge, Moore, Johnston, and Lochner (2002) found that the rural social support programs did not meet the needs of rural families, due to the lack of flexibility of these programs. Further, emerging research confirms and expands upon prior research identifying time limitations, fear of the unknown, low health priority, and lack of companionship or support as reported barriers to seeking preventative health services among rural low-income residents (Murimi & Harpel, 2010). From their findings, Murimi and Harpel (2010) concluded that

low-income rural individuals have a health literacy gap interfering with their utilization of services (p. 280). This literacy gap impedes recipients of formal social support services as they experience difficulties completing paperwork and providing supporting documentation (Hasting, Taylor, & Austin, 2005).

Rural residents are characterized as having an underlying culture of independence and self-reliance. These traits foster personal barriers such as feelings of being stigmatized, socially ostracized, and the target of gossip creating a reluctance to seek formal support services as well as health care (Wagenfeld, 2003). These factors contribute to the underutilization of formal social support and health care services until health conditions cause impairment in daily functioning (Bryant & Mah, 1992; Office of Technology Assessment, 1990; Reading et al., 1997; Strickland & Strickland, 1996; Walker, Lucas, & Crespo, 1994). This underutilization among rural populations results in "unrecognized and undiagnosed problems" (Stamm, Lambert, Piland, & Speck, 2007, p. 300), which in turn, further contributes to health disparities among rural individuals.

Less explicit but equally relevant, *intersetting knowledge* refers to an individual's ability to recall and apply information from one setting to another (McIntosh et al., 2008). For example, a participant of the Women, Infant, and Children (WIC) program is provided nutritional education in one setting. The ability of the participant to recall and apply the skills taught through WIC at the grocery store would be an observable application of intersetting knowledge, as the participant applied information across settings. In this study, the intersetting knowledge of interest is the affective process associated with perceived social support and the cognitive process associated with perceived self-sufficiency.

Understanding social networks within rural communities can be "powerful and effective" when paired with formal social support services (Riebschleger, 2007, p. 207). Rural communities have dense social networks, social ties of long duration, and a shared history among residents (Phillips & McLeroy, 2004). Historically, social support has been identified as an important determinant of health risk, whereas a lack of social support increases the susceptibility to health problems. In their pioneering study of social contact and mortality, L. F. Berkman and Syme (1979) found that individuals with low levels of social contact had mortality rates that were two to four and one-half times greater than those with strong social ties. Although L. F. Berkman and Syme were not studying social support per se, their research documents the importance of social relationships to health outcomes. Research suggests that social support provides access to well-being through its ability to provide a protective barrier during stressful situations or life transitions, as well as enhancing one's personal strengths (Caplan, 1974; McCubbin & Boss, 1980).

Emerging research indicates that low-income individuals who report high levels of perceived social support are less likely to utilize formal social

support services despite meeting qualification guidelines (De Marco, & De Marco, 2009). In a study of low-income women, Green and Roger (2001) found that women who believed that they had tangible and belonging support, or interpersonal connectedness, reported higher levels of perceived mastery and lower levels of stress. Green and Roger further argued that women who established strong social networks demonstrated greater mastery and control over their lives.

Broadly defined, *self-sufficiency* refers to an individual's ability to make use of acquired knowledge and skills to solve problems and productively move forward. Self-sufficiency is frequently associated with economic stability of an individual and is often a latent goal of government subsidy programs. Yet there is not a clear definition or evaluative tool designed to measure levels of self-sufficiency (Hawkins, 2005). Research asserts that self-sufficiency is more than mere financial security, suggesting that it is a process rather than a goal (Braun, Olsen, & Bauer, 2002; Daugherty & Barber, 2001; Gowdy & Perlmutter, 1993). Gowdy and Perlmutter's (1993) research suggests that self-sufficiency reflects dimensions of autonomy, financial security and responsibility, family and self well-being, and basic assets for living in the community. In their research on the impact of community health programs on low-income mothers, Becker, Kovach, and Gronset (2004) defined *self-sufficiency* as an individual's ability to maintain social, political, economic, and psychological control through their access of information, knowledge, and skills. This control allows individuals to define their own needs, find solutions, and move forward to the next need. However, beyond the research of Becker et al., there is no other research explicitly linking the concept of self-sufficiency to health outcomes.

DATA AND METHOD

The sample of 304 women in this study was drawn from Rural Families Speak (RFS). The central focus of RFS, a longitudinal multistate research project, was to assess the well-being of rural low-income mothers and their families during welfare reform. In RFS three waves of data were collected between 1998 and 2000. The larger RFS data set comprises 465 participants from non-metropolitan counties (populations between 2,500 and 19,000) in 14 states¹ across the United States, as identified through the Butler and Beale (1994) coding scheme. Eligible RFS participants were women age 18, with at least one child age 13 or younger, and a family income below 200% of the poverty threshold. The sample for this study comprises the 315 women who completed Wave 1 and Wave 2 of RFS project. Of those 315 women, this

¹Participating were California, Colorado, Indiana, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New York, Oregon, and Wyoming.

study utilized only those with full health data at Time 2, resulting in a sample of 304.

RFS participants were recruited through a self-selection process where informational fliers with eligibility criteria were posted at sites that participants might frequent, including Head Start program sites, Medicaid and WIC offices, and adult education sites. To ensure sensitivity to ethical issues, RFS investigators obtained necessary approvals from the Institutional Review Boards of their respective universities. All RFS participants provided consent to participate in the study and were informed of the purpose of the study, their role and definition of participation, their rights, and confidentiality procedures. Across all data collection sites, interviewers trained in the RFS protocol collected quantitative data using standardized measures, as well as qualitative data in semistructured interviews. This article reports findings using RFS quantitative data.

Measures

This study utilized several components of the RFS interview protocol to test the hypothesized relationship between self-reported health, multisetting participation (behavioral processes), and intersetting knowledge (affective processes and cognitive processes). First, self-reported health outcomes of rural low-income women were operationalized using a 29-item scale at Time 1 and Time 2, in which participants responded on a *yes* or *no* basis if they experienced specific health problems (e.g., high blood pressure, diabetes, cancer, depression, joint pain, fatigue, allergies, frequent colds, and headaches). The count represents the sum total of *yes* responses indicating reported health problems.

Second, multisetting participation or the behavioral processes were reflected through a participant's utilization of formal social support services and health care services. The utilization of formal social support services was operationalized using participants' reported participation in six federally funded assistance programs at Time 1 (e.g., WIC, Free or reduced lunch program, housing assistance, energy assistance, transportation assistance, and Medicaid). The count represents the sum total of *yes* responses indicating participation. In other words, a lower score would indicate that the participant is participating in fewer federally based programs. Participation in formal social support services other than federally funded assisted programs was not collected in the RFS data. Health care utilization was operationalized using a continuous variable where participants provided an estimated number of visits to a health care provider within the last 12 months at the Time 1 interview.

Third, to capture intersetting knowledge or the affective and cognitive processes among this sample, a latent variable was constructed utilizing several components of the RFS interview protocol. The affective processes

associated with intersetting knowledge, perceived social support, and perceived self-sufficiency were constructed using the Parenting Ladder. The Parenting Ladder, an instrument developed for utilization in a statewide evaluation of the Healthy Start Program in Oregon (Richards, 1998), has a reported reliability coefficient of $\alpha = .87$, reliability for this sample of $\alpha = .856$. The sample of interest in this study comprises women who had at least one child younger than age 13, thus the Parenting Ladder lends itself to operationalize perceived social support and self-sufficiency as the affective processes of interest.

Perceived social support was affectively operationalized using select items from the Parenting Ladder. The six selected items from the Parenting Ladder assess the degree to which the participant has people on whom to rely for support with a 6-point Likert-type scale that ranges from *low* to *high*. Items include other parents for you to talk to, someone to help you in an emergency, someone to offer helpful advice and moral support, someone to relax with, a professional to talk to, and overall satisfaction with the amount of support.

Perceived self-sufficiency was affectively operationalized using select items from the Parenting Ladder, which captured an individual's perceived confidence in parenting. These items were chosen, as the individuals utilized in this study were all currently parenting at least one child. The seven selected items assess the degree of confidence a participant has in his or her ability as a parent from low to high. Items include knowledge of children's growth and development, confidence to know what is right for child, ability to create safe home for child, success in teaching child to behave, ability to find fun activities of interest to child, amount of stress right now, and ability to cope with stress.

Finally, the cognitive processes associated with intersetting knowledge were captured through an individual's report of perceived social support within the community and perceived self-sufficiency as related to the ability to accomplish tasks critical in everyday living. Perceived social support was cognitively operationalized using the community resource component of the Even Start Life Skills and Community Resource Assessment (Richards, 1998). Through a series of 20 *yes* or *no* questions, the community resource component assesses the degree in which participants are aware of available health and social services in their community at Time 1. The total count represents the sum total of *yes* responses indicating knowledge of where to get help within the community, with a reliability coefficient of $\alpha = .888$. Perceived self-sufficiency is cognitively operationalized utilizing the life skills component of the Even Start Life Skills and Community Resource Assessment. Participants responded on a *yes* or *no* basis to questions related to the ability to accomplish tasks critical in everyday living (e.g., obtaining a driver's license, car insurance, car registration, health insurance, checking account, local library card, the ability to write personal checks, manage bills, make

family budgets, stretch groceries at the end of the month, applying for credit cards, preparing meals, getting telephone service, working with landlord, talking to children's teachers, applying for a job, joining local clubs, and creating a personal support system). The count represents the sum total of yes responses indicating a participant's perceived level of life skills, with a reliability coefficient of $\alpha = .778$. In other words, as the sum total increases a participant's perception of ability to accomplish critical tasks increases.

Analysis

The purpose of this analysis was to develop a model to determine if multi-setting participation and intersetting knowledge influenced self-reported health among rural low-income women over time. We hypothesized that, first, multisetting participation would mediate the amount of self-reported health problems over time; secondly, that intersetting knowledge would further mediate the relationship above and beyond the mediation that occurred through multisetting participation, in turn reducing self-reported health problems over time. We tested two variables from the RFS data set and developed a latent construct.

Analysis occurred in two steps. First, the relationships between the variables were assessed using bivariate correlations in SPSS (16). Bivariate correlations, standard deviations, and means for each of the observed variables are presented in Table 1. Statistically significant correlations are presented at the $p \leq .05$ and $p \leq .01$ levels. Next, separate structural equation models (SEMs) were developed to test each hypothesis using Mplus (Muthen & Muthen, 2009).

Upon the assumption that the variables of interest would affect reported health problems over time, as outlined in the previously stated hypotheses, all models are presented with fully standardized (STDYX) coefficients. Maximum likelihood (ML) was utilized to account for missing data, as ML utilizes available data from variables with values to obtain likelihood values of missing data points.

To assess the quality and statistical significance of both models, several fit indices were utilized. Chi-squared (χ^2) was used to test the hypotheses, in that the relationships proposed in both models provided an explanation of the relationship that exist in the data. A nonsignificant chi-squared value indicates a good fit, whereas a significant value would indicate that the given model's covariance structure is significantly different for the observed covariance matrix (Kline, 2005). Taking into consideration that the chi-squared statistic often lacks power when used with a small sample (as in this study), leading to the inability to discriminate between good fitting models and poor fitting models, additional indices were utilized to assess model fit (Kenny & McCoach, 2003). The Comparative Fit Index (CFI) and Tucker Lewis Index

TABLE 1 Standard Deviations, Means, and Intercorrelations Between Study Variables

	Reported health problems at time 1	Utilization of formal social support	Reported visits to health care provider	Knowledge of community resources	Parental confidence	Perceived social support	Life skills	Reported health problems at time 2
Reported health problems at Time 1	—							
Utilization of formal social support	.150**	—						
Reported visits to health care provider	.239**	—	—					
Knowledge of community resources	—	.260**	—	—	.149*			
Parental confidence	-.143**	—	—	.149*	—	.424**	.238**	
Perceived social support	-.220**	—	—	.290**	.424**	—	.370**	-.120**
Life skills	—	—	—	.575**	.238**	.370**	—	—
Reported health problems at Time 2	.792**	—	.237**	—	—	-.120*	—	—
<i>M</i>	4.22	3.46	9.22	16.58	30.82	26.59	14.44	3.69
<i>SD</i>	3.51	1.55	13.54	4.79	4.92	7.54	3.32	3.29
<i>N</i>	287	275	282	234	279	278	217	304

p* significant at .05 level (2-tailed). *p* significant at .01 level.

(TLI) were utilized as incremental fit measures. Both indices are similar in nature as each compares the fit of the model to a null model or independence model, respectively. Further, both indices perform well among small samples. In both cases the indices vary from 0 to 1, where indices greater than .90 indicate an acceptable fit for the estimated model (Kline, 2005). Finally, the root mean square error of approximation (RMSEA), which is the measure of incongruence per degree of freedom, was utilized to measure absolute fit (Kline, 2005). An RMSEA less than or equal to .05 indicates close approximate fit, values between .05 and .08 suggest reasonable error of approximation, and values greater than .10 suggest poor fit (Browne & Cudeck, 1993).

RESULTS

Sample Characteristics

Because RFS eligibility criteria specified that participants had to be females, age 18 older, living in families with incomes below 200% of the federal poverty line, and have at least one child age 13 or younger, the sample was relatively homogenous with little variability in demographic variables. Preliminary analysis revealed that among a highly homogenous sample of rural low-income women, there was not enough variability among the demographic variables to statistically influence the hypothesized relationships.

All participants were women, and on average were age 29.5 (range 18–58) at Time 1. A large portion of the participants identified themselves at White (68.1%), followed by Hispanic (18.4%), and African American (6.9%); the sample is representative of the total RFS sample. Participants' educational levels ranged from less than an eighth-grade education to a graduate degree, with 17.8% having some high school education or less, 30.1% of the participants holding either a high school diploma or a General Equivalency Diploma, and 40.8% having either vocational training or attended some college without degree attainment. Further, a large portion of the participants reported either being married (42.8%) or living with a partner (16.1%). The majority of participants reported having 2.26 children residing in their home at the Time 1 interview, and, on average, participants were age 20.9 when they first became a parent. Almost one half of the participants were employed (45.4%) either part- or full-time, with more than one half (64.7%) of the participants reporting having some form of health insurance.

Multisetting Participation

The first model assumes that multisetting participation at Time 1 will mediate the relationship between reported health problems at Time 1 and reported

health problems at Time 2. The mediating relationship and results are presented in Model 1, with fully standardized (STDYX) coefficients (see Figure 1). The model perfectly reproduced the covariance structure of the data, as indicated by the fit indices ($\chi^2=.0558$, $df=1$, p Value =.4552, CFI=1.0, TLI=1.012, RMSEA=.000), however the results do not fully support the hypothesized relationship, in that multisetting participation (reported visits to a health care provider and utilization of formal social support services) is not significantly associated with reported health problems at Time 2.

A standard deviation increase in reported health problems at Time 1 is associated with an *increase* in multisetting participation (reported visits to a health care provider, $SD=.238$, $p \geq .001$, and utilization of formal social support services, $SD=.143$, $p > .05$). In other words, an increase in reported health problems at Time 1 among rural low-income women was associated with an increase in multisetting participation; yet multisetting participation was not directly associated with reported health problems at Time 2.

Although the findings did not support the hypothesized relationship between reported health problems at Time 1, multisetting participation, and reported health problems at Time 2, results indicate that mesosystemic processes, specifically behavioral processes, are influenced by an increase in reported health problems.

FIGURE 1 Model 1: Multisetting participation. *Note.* Bolded paths are significant. *Significant at .001 level. **Significant at .05 level (2-tailed).

Intersetting Knowledge

The second model extends the prior assumptions, in that multisetting participation influences affective and cognitive processes, processes inherently seen in intersetting knowledge. Thus, Model 2 estimates that intersetting knowledge in Time 1 will amplify the mediating effect of multisetting participation such that, as multisetting participation increases so does intersetting knowledge, and in turn decreases reported health problems at Time 2 (see Figure 2). The results from Model 2 extend the previous findings and are presented with fully standardized (STDYX) coefficients. The model yields reasonable fit indices ($\chi^2 = 35.223$, $df = 17$, p Value = .0058, CFI = .957, TLI = 9.28, RMSEA = .059).

The model partially supports the hypothesized relationship, in that a standard deviation increase in the utilization of formal social support services was associated with a $SD = .219$ ($p \geq .05$) increase in intersetting knowledge, when controlling for reported visits to a health care provider. However, when controlling for utilization of formal social support services, reported visits to a health care provider were not significantly associated with intersetting knowledge. Results also indicated that a standard deviation increase in intersetting

FIGURE 2 Model 2: Intersetting knowledge. *Note.* Bolded paths are significant. *Significant at .001 level. **Significant at .05 level (2-tailed).

knowledge was associated with a $SD = .108$ ($p \geq .05$) increase in reported health problems at Time 2, which did not support the hypothesized relationship.

Although the hypothesized relationship is not supported, it is important to point out the slight decrease in reported health problems over time, $t(286) = 3.515$, $p < .001$. The first model revealed that multisetting participation was not directly associated with reported health at Time 2. However, the hypothesized relationship between reported health at Time 2 and multisetting participation is established with the addition of intersetting knowledge, as seen in Model 2. This relationship suggests that the behavioral, affective, and cognitive processes of rural low-income women were potentially influenced by reported health problems at Time 1, and moderately influenced reported health problems at Time 2.

DISCUSSION

Findings suggest that the mesosystem is interactional, as behavioral, affective, and cognitive processes directly influence each other. Results of this study support the argument that access to health care and formal social support programs alone does not improve the reported health of rural low-income women. Neither reported utilization of health care nor utilization of formal social support services were found to have a direct significant effect on reported health problems over time. In fact, despite the fact that the rural low-income women from this study utilized slightly more formal social support programs than urban populations (three programs vs. two programs) (De Marco & De Marco, 2009), their higher rate of utilization did not significantly affect future reported health problems. The findings from this study are consistent with prior research suggesting that only between 3.5% to 10% of health outcomes are accounted for by the actual delivery of health care (Hartley, 2004; Williams, 1990).

By moving beyond a behavioral focus on service utilization and shifting attention to the affective and cognitive processes that make up intersetting knowledge, a missing link between service utilization and future reported health emerges. In particular, findings from this study demonstrate that an increase in intersetting knowledge is significantly linked to the utilization of formal social support services, but not to health care visits. Further, increases in intersetting knowledge subsequently increase reported health problems over time. This relationship and the preceding findings suggest two competing interpretations of how the interactional nature of the mesosystem influences health and well-being among rural low-income women.

Intersetting Knowledge Increases Self-Awareness

One interpretation of the findings showing that increases in intersetting knowledge are predictive of increases in reported health problems is that

women who possess more intersetting knowledge may also be more self-aware. Perhaps higher utilization of formal social support services enhances intersetting knowledge both affectively, as evidenced by increases in perceptions of social support and reported self-sufficiency, as well as cognitively, as evidenced by increases in life skills and knowledge of community resources. Enhanced intersetting knowledge potentially affords women the ability to make use of acquired knowledge and resources and, in turn, allows them to define their own needs, become self-aware, and be able to better identify health-related concerns.

The conceptualization of intersetting knowledge in both the educational (McIntosh et al., 2008) and medical fields (Campbell & McDaniel, 2000) suggests that intersetting knowledge reinforces mesosystem experiences by linking behavioral, affective, and cognitive processes to unlinked microsystems. This study suggests that the utilization of formal social support programs provided the opportunity for rural low-income women to link mesosystem experiences through intersetting knowledge, thus allowing for affective and cognitive processes to be applied within unlinked microsystems. The use of prior experiences, or intersetting knowledge, affords participants the perception of higher levels of social support and self-sufficiency. Unfortunately, this interpretation fails to explain the lack of significance between utilization of health care and intersetting knowledge.

Rural Independence and Fear of Social Stigma

As previous research has established, rural individuals are often reluctant to access social support and health care services due to personal barriers, a culture of self-reliance, and lack of autonomy (Wagenfeld, 2003). Of the rural low-income women who sought and engaged in more formal social support services and reported an increase in perceived social support and self-sufficiency, it is conceivable that they did not further apply the acquired knowledge and resources in an effort to lessen the perceived stigma associated with their initial utilization of formal social support and health care services. Failure to apply their intersetting knowledge may have contributed to worsening reports of health problems at Time 2.

Previous research on rural culture would lend one to believe rural independence and fear of social stigma prevents multisetting participation, which in turn interrupts the interactional nature of the mesosystemic processes that transfer knowledge to one setting to another among rural low-income women. Although perceived and tangible social support has been linked to higher levels of perceived mastery (Green & Roger, 2001), well-being (Cochran, 2002), and physical and mental health (Seiling, 2006) among rural residents, emerging research suggests that presumed social support associated with individuals living in rural communities might actually hinder access to necessary supportive programs when rural individuals are most vulnerable

(Kelly, Shedlosky-Shoemaker, Porter, DeSimone, & Andrykowski, 2001). When rural low-income women do not feel comfortable making use of support services, other areas in their lives may suffer as a result.

Implications

Results of this study reveal interesting implications for social work practice and education. First, findings suggest that attempts to lessen or alleviate disparities in health and well-being among rural low-income women should embrace an ecological systems approach. This approach would allow social service programs to make use of the behavioral processes involved in seeking, making use of, and conforming to program requirements or recommendations, as well as move service structure toward an integrated holistic approach focused on the interplay between the behavioral, affective, and cognitive processes within the mesosystem to promote health and well-being.

Findings further suggest that a move toward an integrated holistic approach would entail that cultural competency be redefined to embrace an understanding of rural diversity, in that differences are apparent within and between rural low-income women (Riebschleger, 2007).

Rural service providers must not only address the individual needs of their clients but also recognize the rural community context in which clients live and function. For example, a myopic focus on improving access to health care and formal social support services for clients does not automatically translate to improved health within a rural community context. Despite changes in accessibility, rural low-income women continue to confront barriers associated with the stigma of service utilization, as well as low-income status. An understanding of rural culture and the interactional nature of the mesosystem may entail a paradigm shift, moving programs away from linear focused modalities. Recognizing that within the rural context, approaches centered on addressing individual internal and interpersonal processes potentially contribute to the restrictive nature of social service programs and furthers exacerbates the stigma attached with service utilization (Locke & Winship, 2005), subsequently contributing to the differences in health among rural low-income women.

Limitations

As with most research, this study was not without limitations. The sample, although unique in that participants were drawn from a variety of rural communities, was not nationally representative. Participants in this sample were recruited utilizing a self-selection process through local food stamp program sites, Medicaid offices, WIC offices, and adult education sites, which skew findings toward those more likely to participate in formal social support services. Participants were provided incentives to participate in the study. The combined sampling technique, study criteria, and incentive-based

participation led to a highly homogenous sample, thus decreasing the variability in factors associated with health risk among rural low-income women. It is also important to note that intersetting knowledge, or the affective and cognitive processes, were assessed utilizing an interview style approach. This approach potentially constrained the responses provided for all of the study measures, thus reflecting either higher or lower levels of reported health problems, multisetting participation, and intersetting knowledge. Finally, and maybe the most critical limitation, health among rural low-income women was operationalized using participants' self-reported health problems, thus lacking the reliability of a standardized measure. However, research demonstrates that over time self-evaluation of one's own health status is considered one of the best indicators of mortality and morbidity (Idler & Kasl, 1991).

CONCLUSION

In summary, this study suggests that within the rural context we must embrace the complexities of rural diversity, as well as recognize the affective and cognitive processes alongside behavioral processes occurring within the mesosystem. With this recognition, we may begin to understand and alleviate the contextual factors associated with rural disparities in health and well-being, among rural low-income women.

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