



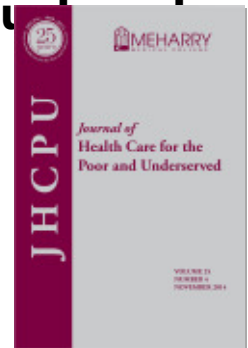
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Nurse *versus* Community Health Worker Identification of Psychosocial Risks in Pregnancy through a Structured Interview

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Abstract: A structured psychosocial risk screening interview, the Prenatal Risk Overview, was administered to 733 women in prenatal care. Either a community health worker (CHW) or a registered nurse (RN) conducted the interview based on day of the week. A comparison of identified risk factors found no significant differences between study samples for six of 13 domains. For CHW interviews, significantly more participants were classified as Moderate/High Risk for Depression, Lack of Telephone Access, Food Insecurity, and Housing Instability, and as High Risk for Lack of Social Support, Lack of Transportation Access, and Housing Instability. For RN interviews, significantly more participants were classified as High Risk for Alcohol Use. Community health workers successfully conducted psychosocial screening and elicited more self-reported risk than RNs, especially lack of basic needs. Comparing the hourly salary/wage, the cost for CHWs was 56% lower than for RNs. Preliminary findings support use of paraprofessionals for structured screening interviews.

Key words: Community health worker, nurse, risk screening, prenatal care, Healthy Start.

Time constraints have been identified as a major barrier to psychosocial risk screening in primary care,¹⁻³ impeding compliance with recommendations for screening for depression, substance use, and partner violence.⁴⁻⁸ A potential solution could be the use of community health workers (CHWs) to relieve professional care providers of this burden.

The move toward patient-centered medical homes provides increased opportunities for CHWs to become integrated into clinical care teams.⁹⁻¹² The patient-centered medical home seeks to place the patient and family, embedded within the community, at the center of the care system; a trained CHW, as a trusted member of the community, is an ideal liaison between the patient and clinical providers.^{9,10} However, in clinical settings, the optimal roles of CHWs are often not clearly delineated.^{7,9-11,13,14} Because CHWs are skilled at engaging patients and clinical providers have limited time with

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patients, identifying functions that could be performed effectively by CHWs would benefit both providers and patients and could be cost-effective as well.¹⁵⁻¹⁷

Historically, community health workers have been involved primarily in providing health education services in community or health care settings.¹⁸ They also have been used to conduct community outreach to encourage cancer screening and other preventive health care and to provide patient advocacy, navigation activities, and social support.¹⁹⁻²³ The perceived benefits of lay health workers, as they are also called, include their potential to connect with target populations through similar characteristics or common life experiences, their residence in the communities they serve, and their cultural competence.¹⁹⁻²² They may also be viewed as more trustworthy or credible than other health care providers in some circumstances.¹⁹ A systematic review of randomized controlled trials of interventions provided by CHWs found the CHWs were effective at promoting immunizations, encouraging initiation of breastfeeding, and improving tuberculosis treatment outcomes.^{20,22,23} However, no prior study was found that examined the use of CHWs to conduct structured risk screening interviews. This study is the first to determine whether a prenatal psychosocial risk screening interview that had been administered routinely by registered nurses in community health care centers could be conducted with equal effectiveness by community health workers. This study also compared the cost of using these two types of interviewers for this purpose.

Methods

Study overview and context. The interviewer equivalence study was one of four research components funded to assess the validity of the Prenatal Risk Overview (PRO).²⁴ The PRO is a standardized psychosocial risk screening interview administered at intake to all prenatal patients at Twin Cities Healthy Start program sites. The Minneapolis-Saint Paul program is one of 105 programs funded through the HRSA Maternal and Child Health Bureau Healthy Start Initiative to reduce infant mortality and improve birth outcomes. This study was designed to determine whether there were any differences in identified risk factors associated with administration of the PRO by a CHW *versus* a registered nurse (RN). For purposes of this study, CHWs were paraprofessionals with no more than a one- or two-year certificate who already worked at the study clinic under supervision of a licensed social worker. Before its inception, the study was approved by the Minnesota Department of Health institutional review board. Approval was granted for the participation of minors who are permitted by Minnesota law to seek reproductive health services without parental consent.

Study participants. Study participants were recruited from the prenatal care population of the largest community health care center in Minneapolis between July 2007 and June 2010. Patients with limited English proficiency (LEP) were not eligible for the study because the presence of an interpreter would confound the distinction between the two groups of interviewers under study. Patients were informed that either an RN or CHW would conduct the interview, but did not learn who would interview them until after consent. Consenters were provided with a \$10 gift card as compensation.

Interviewer training. One of the RNs participated in a group training session when the PRO was adopted at all Healthy Start program sites. The second RN and the four

CHWs were trained individually as they were assigned to conduct the PRO. A member of the research staff presented the script used to introduce the PRO to interviewees which explained its purpose and emphasized that all prenatal care patients were asked the same questions; provided instructions in adhering to the structured question format with no paraphrasing and written suggestions for responding to requests for clarification; and provided hands-on training in data entry.

Recruitment, group assignment, and PRO administration. Prenatal intakes were conducted three days a week. Clinic staff not involved in the study scheduled these appointments through routine procedures. Over the course of the study, two RNs and four CHWs administered study interviews near the end of the prenatal intake appointment. Because random assignment to interviewer type was deemed potentially too disruptive to clinic routines, assignment to interviewer type was based on day of the week. Periodically, health department staff notified the prenatal intake RN of the interviewer assignment schedule, alternating the 2:1 day ratio between CHWs and RNs as needed to achieve a 50–50 balance over time. Registered nurses conducting the prenatal intake process explained the study to eligible patients and requested consent. For nonconsenters, RNs conducted the PRO per standard procedures. For consenters, if the day was assigned to an RN interviewer, the RN conducted the interview. If the day was assigned to a CHW interviewer, the RN paged the CHW to conduct the interview. If the CHW was unavailable, the RN completed the interview and coded the case as “not available for assignment;” these cases were excluded from the study sample. Interviews were not audiotaped or observed because these procedures may have altered interviewer or patient behavior.

Measures. *Screening instrument.* The PRO was designed to standardize psychosocial risk screening for eligibility in the Twin Cities Healthy Start program.²⁴ The PRO addresses the five domains for which screening has been endorsed by government or professional groups (depression, tobacco use, alcohol use, other drug use, and domestic violence); three domains for which research supported a link to poor birth outcomes (food insecurity, homelessness, and lack of social support); and four domains identified by local providers as critical to prenatal care compliance (access to telephone, access to transportation) or to care coordination (legal problems, involvement with child protection services). The risk thresholds for each domain were defined by the source instrument or consensus of local providers and health care professionals with expertise in specific domains. The *High Risk* classification indicated need for a referral to specialized services, such as a mental health or drug use assessment or a domestic abuse program or shelter. *Moderate Risk* indicated a less intensive intervention such as education or social support. Box 1 summarizes the domains and scoring criteria.

Hourly salary or wages. Personnel costs were averaged over the course of the study based on study site personnel budgets.

Data analysis. Cross-tabulations were conducted to compare sociodemographic variables for nonconsenters and consenters, and within the consentor group, for RN and CHW interviewees. For the study sample, the risk domain variables were cross-tabulated to compare responses between the groups of RN and CHW interviewees, between the two groups of RN interviewees, and among the four groups of CHW interviewees. The analyses were conducted two ways: by dichotomizing the risk variables as Low Risk

Box 1.

PRENATAL RISK OVERVIEW (PRO) DOMAINS AND RISK THRESHOLDS

Telephone Access [current, 1 question]. High Risk = rarely or none of the time. Moderate risk = some of the time.

Transportation Access [current, 1 question]. Scoring same as above.

Food Insecurity [past 12 months, 4 questions about lacking sufficient money for food]. Responses scored (0) Never, (1) Sometimes, (2) Often. High Risk = 6–8 points. Moderate Risk = 3–5 points.

Housing Instability [past 12 months, 2 questions; current, 2 questions]. High Risk = shelter stay of more than 2 nights; temporary living situation of 6 months or more; currently living in an unstable housing situation; or very concerned about not having a place to stay after baby's birth. Moderate Risk = shelter stay of 1 or 2 nights; temporary living situation of 3–5 months; currently living in a somewhat stable housing situation; or somewhat concerned about not having a place to stay after baby's birth.

Social Support [current, 6–8 questions]. High Risk = no one to count on in times of need; no one to help with child care; or no partner or boyfriend or other adult to talk with regularly, or unsatisfactory communication with individuals. Moderate Risk = only one person to count on in times of need; only one person to help with child care; or satisfactory communication with either a husband/boyfriend or other adult but not both.

Victim of Partner Violence [12 months pre-pregnancy awareness, 3 questions; post-pregnancy awareness, 3 questions]. High Risk = physical abuse, coerced sex, or fear of abuse during pregnancy. Moderate Risk = any of these responses in the 12 months before pregnancy.

Physical/sexual abuse by a non-partner [12 months pre-pregnancy awareness, 3 questions; post-pregnancy awareness, 3 questions]. Scored same as Partner Violence.

Depression [past 2 weeks, 9 questions from PHQ-9]. Responses scored (0) not at all, (1) several days, (2) more than half the days, (3) every day or nearly every day. Very High Risk = 20–27 points. High Risk = 15–19 points. Moderate Risk = 10–14 points.

Cigarette Smoking [one month pre-pregnancy awareness, 2 questions; post-pregnancy awareness, 2 questions]. High Risk = smoking more than 5 cigarettes on at least one day since pregnancy awareness. Moderate Risk = smoking 1–5 cigarettes on at least one day since pregnancy awareness, smoking daily before pregnancy awareness, or smoking more than 5 cigarettes on at least one day before pregnancy awareness.

Alcohol Use [12 months pre-pregnancy awareness, 6 questions; post-pregnancy awareness, 2 questions]. High Risk = any alcohol use since pregnancy awareness in combination with a 12-month history that included frequent and/or high quantity consumption or an adverse consequence; or higher levels of drinking since pregnancy awareness (such as 1 drink daily or 3 drinks on a single occasion monthly) irrespective of past patterns. Moderate Risk = high-risk historical patterns if no alcohol use since pregnancy awareness or use patterns lower than the High Risk threshold.

(Continued on p. 1578)

Box 1. (continued)

Drug Use [12 months pre-pregnancy awareness, 2 questions; post-pregnancy awareness, 1 question]. High Risk = any drug use post-pregnancy awareness, drug use 5–7 days per week pre-pregnancy awareness, or drug-related neglect of responsibilities pre-pregnancy awareness. Moderate Risk = weekly, monthly, or rare drug use pre-pregnancy awareness in the absence of pre-pregnancy neglect of responsibilities and post-pregnancy awareness use.

Legal Problems [current, 1 question]. High Risk = legal problems or on probation or parole. (No Moderate Risk level.)

Child Protective Services involvement [current, 1 yes/no question; past, 1 yes/no question]. High Risk = current involvement (as a parent). Moderate Risk = past involvement (as a parent) only.

versus Moderate Risk/High Risk combined and as Low Risk/Moderate Risk combined *versus* High Risk. The significance of differences was tested using chi-squares. For multi-item domains in which significant differences between interviewer type were found, individual items were also cross-tabulated by interviewer type.

Results

Of 1,416 pregnant women seen at the study site during the study period, 1,010 met the study criteria of English fluency and no prior participation in the study (see Figure 1). Seven-hundred seventy-seven (777) women were asked to participate with omissions due primarily to the unavailability of study staff. Of those asked to participate, 733 (94.3%) granted consent and completed the study.

Asian/Pacific Islanders (predominantly of Hmong ethnicity) were significantly less likely to consent and African Americans were significantly more likely to consent than other racial groups combined (see Table 1). Women who were born outside the United States and those who were married were also significantly less likely to consent than their counterparts.

Six interviewers were involved in the study, with only one RN and one CHW assigned at any point in time. One RN conducted 202 interviews and the other conducted 162 interviews. The numbers of interviews conducted by each CHW were 219, 94, 29, and 27.

No significant demographic differences were found between women interviewed by RNs or CHWs (Table 1). The final study sample was predominantly young, unmarried, African American, born in the United States, and interviewed in the first trimester.

For comparisons of Low Risk with the Moderate/High Risk classification or for comparisons of Low/Moderate Risk with the High Risk classification, no significant differences between study samples were found for 6 domains: Partner Violence, Physical/Sexual Abuse by a Non-partner, Cigarette Use, Drug Use, Legal Problems, and Child

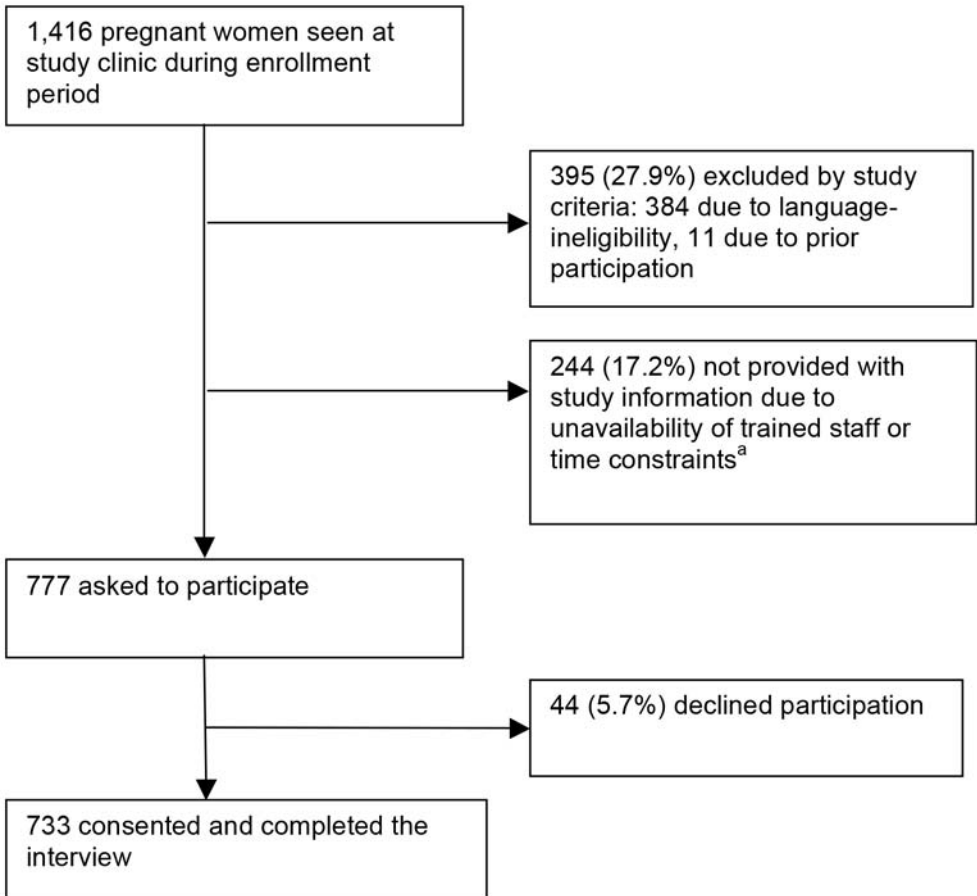


Figure 1. Numbers of eligible, consenting and participating women.

^aOmissions were due to factors such as staff turnover and vacations (recruitment was suspended until experienced staff returned or new staff were trained), lack of time when intake appointments ran long, and the precedence of medical needs.

Protection Involvement (Table 2). For the combined Moderate/High Risk classification, significantly higher rates were found for CHW interviews for Depression and three of four basic needs domains: Lack of Telephone Access, Food Insecurity, and Housing Instability. For the High Risk classification, significantly higher rates were found for CHW interviews for Lack of Social Support and two basic needs domains: Lack of Transportation Access and Housing Instability. The only comparison for which a significantly higher rate was observed for RN interviews was High Risk for Alcohol Use.

The item level analysis for multi-item domains was conducted to determine whether there was a consistent pattern of differential risk reporting by interviewer type, or whether only a single item or subset of items influenced higher risk levels reported to CHWs or RNs. For Food Insecurity, significantly higher risk was reported to CHWs for two of four items (food not lasting $p=.047$ and skipping meals, $p=.004$). For Housing Instability, significantly higher risk was reported to CHWs for one of four items (level

Table 1.**COMPARISON OF CONSENTERS VERSUS NONCONSENTERS AND OF PARTICIPANTS ASSIGNED TO A NURSE OR A COMMUNITY HEALTH WORKER**

Descriptive variables	Prospective participants			Participant assignment		
	Non-Consenters (n = 44)	Consenters (n = 733)	p value ^a	RN (n = 364)	CHW (n = 369)	p value ^a
Age, mean, years (SD)	23.7 (5.30)	22.6 (5.27)	ns	22.4 (5.08)	22.7 (5.45)	ns
Race/ethnicity, n (%)			.027			ns
African American	24 (54.5)	511 (69.7)		253 (69.5)	258 (69.9)	
Asian/Pacific Islander	18 (40.9)	138 (18.8)		71 (19.5)	67 (18.2)	
Hispanic (any race)	2 (4.5)	38 (5.2)		19 (5.2)	19 (5.1)	
American Indian	0 (0.0)	8 (1.1)		2 (0.5)	6 (1.6)	
White	0 (0.0)	32 (4.4)		17 (4.7)	15 (4.1)	
Bi/multiracial	0 (0.0)	4 (0.5)		1 (0.3)	3 (0.8)	
Unknown	0 (0.0)	2 (0.3)		1 (0.3)	1 (0.3)	
Nativity, n (%)			.000			ns
U.S.-born	18 (40.9)	538 (73.4)		260 (71.4)	278 (75.3)	
Foreign-born	26 (59.1)	194 (26.5)		104 (28.6)	90 (24.4)	
Unknown	0 (0.0)	1 (0.1)		0 (0.0)	1 (0.3)	
Marital status, n (%)			.002			ns
Unmarried	30 (68.2)	611 (83.4)		303 (83.2)	308 (83.5)	
Married	13 (29.5)	121 (16.5)		61 (16.8)	60 (16.3)	
Unknown	1 (2.3)	1 (0.1)		0 (0.0)	1 (0.3)	
Trimester at screening, n (%)			ns			ns
1st trimester	29 (65.9)	412 (56.2)		190 (52.2)	222 (60.2)	
2nd trimester	15 (34.1)	255 (34.8)		134 (36.8)	121 (32.8)	
3rd trimester	0 (0.0)	54 (7.4)		33 (9.1)	21 (5.7)	
Trimester missing	0 (0.0)	12 (1.6)		7 (1.9)	5 (1.4)	
Eligible for TCHS, n (%)			.000			ns
No	27 (61.4)	252 (34.4)		127 (34.9)	125 (33.9)	
Yes	17 (38.6)	481 (65.6)		237 (65.1)	244 (66.1)	

^aValues were compared by chi-square analyses for all variables except age for which ANOVA was used for mean comparisons.

RN = Registered Nurse

CHW = Community Health Worker

TCHS = Twin Cities Healthy Start program

Table 2.

COMPARISON OF RISK STATUS FOR STUDY PARTICIPANTS INTERVIEWED BY A REGISTERED NURSE (RN) AND BY A COMMUNITY HEALTH WORKER (CHW)

	% Moderate or High Risk (compared with Low Risk)		% High Risk (compared with Moderate or Low Risk)	
	RN (n = 364) %	CHW (n = 369) %	RN (n = 364) %	CHW (n = 369) %
Lack of telephone access	7.1	16.0***	1.9	2.7
Lack of transportation access	39.8	44.4	7.1	12.5*
Food insecurity	30.6	39.6**	6.6	5.7
Housing instability	47.8	62.6***	25.3	33.9**
Lack of social support	59.1	64.2	5.5	10.3*
Intimate partner violence	6.3	5.1	2.7	2.4
Other physical or sexual abuse	7.4	6.0	3.6	3.3
Depression	9.6	16.5**	3.6	5.7
Cigarette smoking	23.1	24.9	3.0	4.4
Alcohol use	19.0	17.9	2.7	0.8*
Drug use	27.2	30.4	15.3	16.0
Legal problems	6.9	5.1	6.9	5.1
Child protection involvement	6.1	5.7	1.1	1.1

*p≤.05

**p≤.01

***p≤.001

RN = Registered Nurse

CHW = Community Health Worker

of concern about having a place to live after the baby was born, $p < .001$). For Lack of Social Support, significantly higher risk was reported to CHWs for three of eight items (not having other adults to talk with, $p = .013$, satisfaction with communication with boyfriend/partner, $p = .007$; and satisfaction with communication with other adults, $p = .006$). For Depression, significantly higher risk was reported to CHWs for three of 10 items (sleep problems, fatigue, and poor appetite or overeating, all $p < .001$). For Alcohol Use, significantly higher risk was reported to RNs for one of eight items (frequency of drinking before pregnancy, $p = .020$).

Comparing domain risk thresholds within interviewer group found only one significant difference between the RNs (Lack of Social Support) and three for the CHWs (Lack of Telephone Access, Lack of Transportation Access, and Food Insecurity). For the CHW differences, the same CHW had higher risk reports for the latter two domains.

The hourly salary for registered nurses and the hourly wage for community health workers were averaged over the 36 months of the study. The average hourly salary for RNs was \$34.30 compared with an hourly wage for CHWs of \$15.23. Without considering costs associated with fringe benefits, the hourly cost for CHW-conducted interviews was 56% lower than that for RN-conducted interviews.

Discussion

No prior study has investigated whether a structured interview for risk screening can be conducted by a CHW as well as by an RN, the standard of care in many clinic settings. This study provides timely evidence that CHWs can effectively conduct such screenings; in this case CHWs identified more risk factors than RNs. For six domains, similar risk levels were found among pregnant women interviewed by RNs and CHWs. However, CHW interviewers were more likely than RNs to identify women at an elevated risk level for Lack of Telephone Access, Lack of Transportation Access, Food Insecurity, Housing Instability, Lack of Social Support, and Depression. RNs were more likely to identify women at High Risk for Alcohol Use. For several domains, items that may be perceived as more subjective contributed significantly to the difference in risk classification. For Housing Instability, for example, responses did not differ for the length of time staying temporarily with friends or family or in a shelter, but concern about not having a place to stay was acknowledged more often in CHW interviews.

The finding that, compared with RNs, CHW interviewers consistently elicited more reports of lack of basic needs raises interesting questions for future research. Perhaps patients viewed the nonprofessional CHWs as more likely to be familiar with financial and social disadvantages and were thus more willing to disclose such circumstances. Or perhaps the CHWs, having lower income themselves, consciously or unconsciously displayed greater empathy with respect to these types of concerns.

The differences between the two interviewer types in Depression risk classification resulted solely from differences in reporting three somatic items (sleep, fatigue, and appetite), not from differences for mood or cognitive symptoms. Although the PHQ-9 does not probe for whether somatic symptoms were pregnancy-related, it is possible that RNs applied their clinical judgment and filtered out affirmative responses they perceived as due to pregnancy while CHWs did not.

Registered nurses' higher likelihood of classifying women as High Risk for Alcohol Use is difficult to interpret. Nurses may be more skilled at eliciting responses regarding behaviors that might affect fetal development. However, similar effects were not seen for other substances (illicit drugs or cigarettes), as might be expected if that were the case. Additionally, the fact that only one significant item-level difference was found among eight items suggests that this may be a random finding.

This study has several significant limitations, including generalizability to other interviewers, other screening interviews, and other patient populations. Our contingent of interviewers was limited to two RNs and four CHWs, a sample too small to draw definitive conclusions. The interview used in the study is structured, with questions read from a computer screen and responses entered into a web-based system; the content addresses psychosocial risk factors before and during pregnancy. For these

reasons, results may not generalize to other modes of administration or other screening instruments. The study population was limited to English-speaking patients at a single urban community health care center. Additional research is needed to confirm the effectiveness of using CHWs to conduct screenings with other populations and in other languages, particularly if an interpreter is also involved or a tool developed in English has been translated to another language.

The inability to assign all eligible women to a study condition is another limitation. To the extent the exclusions were due to the unavailability of the CHW at the time of screening, they likely did not affect results. However, to the extent that women were excluded because their intake appointments were particularly lengthy due to complex medical issues, limiting the availability of the CHW, there is potential for bias toward a sample of patients with less complex histories.

Other limitations include the potential inaccuracy of self-report or the possibility that all interviews were not conducted according to the study protocol. Study results suggest that quantifiable, objective measures resulted in the greatest concordance between the two types of interviewers. It is possible that both RNs and CHWs applied their own experiences in eliciting or interpreting patient responses, resulting in the different rates of depressive symptoms and concerns about basic needs reported to the two groups.

Community health workers can serve as liaisons between the medical and social worlds for the communities they serve. They may benefit the health care system by increasing the cultural competence of health care providers and organizations and bringing greater diversity to the health care work force. They also offer the potential to lower health care costs.²⁵

Despite the study limitations, evidence from this study offers preliminary support for the use of paraprofessionals to conduct a structured psychosocial risk screening interview in a primary care setting, freeing clinical professionals for activities that require their unique skills.²⁶ Because CHWs typically have limited formal education,¹¹ delegating such screening may be most effective if the instrument is standardized, easy to administer and score, and not dependent on clinical judgments. Adequate and ongoing CHW supervision and training are essential,²⁷ including training on the importance of adhering to the standardized tool,¹¹ confidentiality issues in the collection of sensitive patient data, and appropriate personal and work boundaries.¹⁰

Future research replicating the study findings with a larger group of interviewers and a greater number of settings would determine whether CHWs could be used widely and effectively for this purpose. Further study of the relationship between interviewer characteristics and patient disclosures regarding psychosocial concerns also seems merited.

Acknowledgments

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