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Parasitic Infections Among Migrant Farm Families

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The prevalence of parasitic infestation is an indicator of the health, social, and economic conditions within a community. A retrospective study of 422 migrant farmworkers and their families found a prevalence of parasitic infestation of 11.4%. The most significant predictors of infestation were mother's years of schooling (a low level of education was associated with infestation) and the prevalence of other parasitic infections within the family. No significant differences were found between infected and noninfected individuals in country of origin, time residing in the United States, father's years of schooling, sex, or age.

The health of migrant farmworkers has been a cause of concern among health professionals for many years. Cultural differences, lack of access to primary and secondary health services, substandard and unsanitary housing, and limited educational opportunities all contribute to a myriad of complex health and social problems that have not been resolved (Lantz, Dupuis, Reding, Krauska, & Lappe, 1994). Often these formidable obstacles prevent families from receiving essential health services, ultimately exacerbating existing problems and draining essential health and human resources (Bechtel, Shepard, & Rogers, 1995). During this period of increasingly scarce community health resources and the restructuring of health care, determining the most effective health screening and treatment programs becomes increasingly imperative. In view of this, the presence of parasitosis within migrant farm communities may be indicative of ineffective health service programs as well as diminished individual and family health status. Assisting health care providers and program managers in identifying factors that adversely affect the prevalence of parasitic infestation among migrant farm families is the purpose of this article.

Intestinal parasites in Latin American immigrant and migrant farm populations in the United States have been well documented (Bass, Mehta, & Eppes, 1992; Ciesielski, Seed,

Ortiz, & Metts, 1992; Weissman, 1994). Although follow-up care exists, comprehensive continuity of care with a single provider tends to be the exception rather than the norm. Services that are convenient, affordable, and culturally relevant often attract large numbers of migrant farm and disenfranchised families during limited hours of operation. These clinics, often understaffed and underfunded, are unable to adequately address either the multitude of cases or the significant health-education needs of this community. Tertiary and emergency care cases often absorb the bulk of resources available, severely restricting the time and energy needed to facilitate community and family health (Bruno & de Gourville, 1993). However, Caudle (1993) stated that to be effective, care for Hispanics must be family oriented, interpersonal, and respectful of male family members as enablers of family protection; what is currently provided in most health centers serving migrant farm communities may not reflect this type of care.

Currently, the only acceptable mode of diagnosing parasitosis is microscopic examination of a stool specimen. However, a single stool specimen or gastrointestinal symptomatology is generally not considered reflective of parasitic infestation (Kawatu, Lees, & MacLachlan, 1993). Multistage testing is an accurate method of diagnosis but is rarely a viable option in migrant farm communities because of the cost and the unwillingness of individuals to provide multiple stool specimens. Although the presence of eosinophilia on obtaining a routine white blood cell differential can also be reflective of a parasitic infection, eosinophil count alone is not considered a reliable screening mechanism (Mawhorter, 1994). Thus, no cost-effective or culturally sensitive screening measures exist to diagnose parasitosis.

The efficacy of treatment programs for parasitosis among vulnerable populations varies significantly. Gyorkos, MacLean, Viens, Chheang, and Kokoskin-Nelson (1992) found a prevalence of intestinal parasitic infection to be greater than 20% 6 years following treatment among a Kampuchean refugee population in Canada. Compliance and follow-up appeared to be the most significant determinants affecting future infection, although longevity of infection and country of origin were also considered to be significant variables. Developing relationships with key informants greatly facilitated community awareness and subsequently enhanced data collection and treatment programs in this study.

After reviewing data from the Georgia Refugee Health Program, Bruno and de Gourville (1993) stated that culturally appropriate care was an essential element in successfully influencing health encounters among refugees. Cost factors often prohibit a primary care clinic from providing essential services for this group of people because of the multiple and complex health problems presented and a lack of resources available from community health centers. Thus, successful resolution of refugee health problems is dependent on close collaboration between public health and primary care providers. This supports the work of Kawatu, MacLachlan, and Lees (1992), who studied parasitosis among developmentally handicapped adults residing in an institution. They found both

simultaneous treatment and implementation of hygienic educational programs necessary in reducing the prevalence of intestinal parasites.

Persson and Rombo (1994) screened for intestinal parasites using routine stool samples among refugees in Stockholm. In their study, the cost for screening could not be justified based on the few cases found, because little documentation links intestinal parasites with increases in morbidity or mortality. They found country of origin was the strongest predictor of infection. The men in their study were infected more often than the women, and the frequency of parasitic infection was not influenced by years of schooling. This is contrary to the work of DeSantis and Thomas (1992), who stated that a mother's schooling and involvement in family health may be the most important indexes in optimizing health-promotion and risk-reduction activities. Buchwald, Lam, and Hooton (1995) found that intestinal parasites were not associated with sex or length of time residing in the United States when evaluating Southeastern Asian refugees.

Collecting specimens to confirm the presence of parasites in the stool is a barrier for screening in the Latin American culture (Bass et al., 1992). The machismo view of health, with dominance and paternalism as its primary themes, is certainly not conducive to providing stool specimens. In addition, lack of knowledge of the disease and of strategies for its prevention may combine with attitudes of embarrassment toward physical examination to create barriers to successful screening for intestinal parasites (Lantz et al., 1994).

In summary, diagnostic testing for parasitosis is expensive, often unreliable, and culturally insensitive. Results of studies to determine the environmental and social factors effecting the transmission of parasites are conflicting, although the prevalence of parasitic infestations appears to be linked to other health and social indexes. Thus, the ability to control parasitosis represents an outcome measurement of health-promotion and risk-reduction programs within the community.

DESIGN

This retrospective study involved a review of health records in a migrant health clinic located in an underserved, undercounted, and rural county in the southeastern United States. This nonprofit clinic provided primary, secondary, and tertiary health care free of charge for both residential and migrant farmworkers. Very few of the clients spoke English, but translators were often available to interpret Spanish, Creole, and multiple Mayan dialects. The number of visits totaled more than 300 per month, and care was provided through volunteer services of health professionals, students, and lay personnel.

To be eligible for inclusion in the study, the client had to have a case record that revealed the client was treated pharmacologically for parasitosis (secondary to diagnostic confirmation). If more than 20% of the chart had missing data, the case was excluded

from the study. Although both compliance and follow-up for health problems were identified in the literature as essential concepts in the successful treatment of parasitosis, the majority of records reviewed did not reflect this information and the variables were subsequently deleted from the analysis. Children under 5 years old were also excluded from the study because of differences in follow-up and treatment protocols for any presenting illnesses.

From a database consisting of over 2,000 migrant health records, 284 met the criteria for inclusion, although extensive missing data further reduced this number to 220. A randomized group of 202 people without known parasitic symptomatology was selected from the remaining health records as a control. Chi-square statistics were used to compare proportions in this sample, and multiple regression was used to identify optimal predictors of parasitosis. Order of variable entry was driven by the perceived importance of predictor values as determined by a team of physicians, nurses, public health scientists, and lay community leaders after reviewing the literature. Factors considered in the regression model included age, sex, country of origin, years of schooling for each parent, and length of stay in the United States. A significance level of .05 was predetermined.

RESULTS

The sample of 422 migrant farmworkers and their families was primarily Hispanic (76%) and Black (19%), with a higher proportion of women (28%) than men (10%). Children constituted 62% of the sample size. The majority of the adults (84%) needed assistance in translating their health concerns. Geographical areas of origin were combined for analysis and represented the Caribbean Islands (19.4%), Central America (63.0%), and Mexico (17.5%; see Table 1). The mean ages in the study were 23.7 years for adults and

TABLE 1
Parasitic Infection by Geographical Area of Origin, Sex, Age, and Group

Country of Origin	Infected (n = 220)			Noninfected (n = 202)		
	Women (n = 64)	Men (n = 24)	Children (n = 132)	Women (n = 54)	Men (n = 20)	Children (n = 128)
Caribbean Islands (n = 82)	18	6	26	11	6	15
Central America (n = 266)	34	13	89	29	9	92
Mexico (n = 74)	12	5	17	14	5	21

8.3 years for children. Adults in the study had been in school an average of 9.4 years, and all children under 15 years old were currently enrolled. There were no statistical differences in age, years of schooling, or time residing in the United States between the two groups.

The estimated prevalence of documented parasitic infestation among the members of this migrant farm community was 11.4%. The prevalence of parasitic infection was not correlated with length of time residing in the United States ($r = .083, p > .05$) or country of origin, $\chi^2(2, N = 422) = 2.18, p > .05$.

Although there was no statistical association between the prevalence of parasitosis in children by sex, $\chi^2(1, N = 260) = 0.14, p > .05$, parasitic infestation among children was shown to be significantly associated with either parent or another child from the same household being infected, $\chi^2(1, N = 422) = 4.87, p < .05$. The level of the mother's education was significantly related to the prevalence of parasitosis in the family, $\chi^2(1, N = 118) = 6.22, p < .05$, although the father's level of education was not significantly related, $\chi^2(1, N = 44) = 1.37, p > .05$. In the regression equation, years of education of the mother followed by the presence of parasitosis in the family were significant in predicting the occurrence of parasitic infestation.

DISCUSSION

Given the current social and economic climate in the United States, attempting to provide equitable health care to migrant farmworkers by removing barriers to service or by establishing a tax on agricultural products specifically for migrant health care is not realistic. Thus, meeting the need for greater utilization of appropriate screening mechanisms, collaboration among providers, and economy of service must become major goals of program providers and clinicians. In this study, the mother's level of education was the strongest predictor of parasitic infection. Thus, strategies to develop and strengthen educational programs for parents become imperative not only in raising social and economic indexes but also in ensuring healthy families and communities.

Based on the work of Kawatu et al. (1992), educational programs to simultaneously treat and prevent intestinal parasites can be brief and informal, provided such interactions are meaningful and continuous. Informal community-based programs that facilitate female leaders as caregivers have been shown to be effective in providing primary care (Bechtel et al., 1995). However, care must be taken not to violate cultural norms or misrepresent health material when community members act as "trained" instructors (Bruno & de Gourville, 1993).

The estimated prevalence of parasitic infestation among the members of this migrant farm community was 11.4%. This is significantly less than reported in previous studies (Bass et al., 1992; Bruno & de Gourville, 1993) and may reflect either the establishment of a nonmigratory farm community or the number of individuals not adequately diagnosed for intestinal parasites. Migrant farm families who no longer sojourn to harvest agricultural products may develop stronger social and political community ties and thus be more apt to receive primary health care.

Among the children in the study, those infected with parasitic infections were most likely to have parents who were also infected. The number of years the mother attended school was significantly associated with the prevalence of parasitosis among all family members, although the level of the father's education did not appear to be an associated factor. This finding supports the insights of Caudle (1993) and DeSantis and Thomas (1992), who determined that women provide the framework of health-education programs among Hispanic families.

This study supports the work of Buchwald et al. (1995), who found neither sex nor duration of residence in the United States to be a predictor of parasitosis. Individuals in the study who were from the Caribbean Islands (most notably Haiti) had a greater proportion of parasitosis than persons from other geographical areas of origin, although this relationship did not reach statistical significance. This may be reflective of the poverty within the Caribbean countries and the destitute living conditions that follow this group into the United States. This problem is compounded by low levels of education: Adults from Haiti had the lowest number of years of schooling of any group from any country.

Limitations of the study related to the contextual environment must be addressed. Given the nature of providing health services to migrant families in a free-standing, volunteer clinic, efforts are not made to accurately document information for research studies. Centers that are run by lay volunteers do not place priorities on documentation. Further, intake evaluations may be done by people with little background in health care and only a strong altruistic desire to help those in need. Having different individuals translate client concerns on intake forms may have contributed to the number of incomplete records and may have adversely affected the study's outcomes.

Although routine parasitic screening has not been found to be cost-effective or culturally sensitive, community health nurses can take a proactive position in supporting family-centered care, ensuring continuity of services, and collaborating with public health agencies and primary care providers to enhance the care of migrant farm families. Promoting the mother's schooling and providing education about hygienic health practices can be effective approaches to reducing the prevalence of parasitic infections. In addition, efforts to promote education, especially among mothers, may be the single most important factor in raising the social and economic indexes of vulnerable populations everywhere.

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