International Journal of Nursing and Medical Investigation

International Peer Reviewed Journal

Review article

A review on the health status of the street children: An exploratory study

Vanita N Jamdade
College of Nursing, Bharti Vidyapeeth Deem University, Pune, Maharashtra, India

Abstract

The health of the tens of millions of street children globally is understudied. We undertook a systematic review of the existing quantitative literature regarding the health status of street children to summarize available knowledge, identify underexplored areas of research, and inform the future research agenda regarding the health of this population. Demographic data and structural factors associated with street life are summarized. Although data in specific regions or diseases are sparse, the literature review illustrates that street children survival behaviors and the exposures associated with poor shelter have resulted in disproportionate morbidity in the areas of infectious illness, psychiatric disease, reproductive health, and perhaps to a lesser extent, growth. They are the future men and women who will try to fulfill the cherish goals of happy and rich life. Street children are not only homeless but also poor. Poverty dumps a crowd of problems onto a child. Without these skills the child will, as an adult, remain at the bottom of the economic cheap.

Vast areas of health that may disproportionately affect street children in childhood have not been investigated, including chronic diseases and cognitive deficits. Studies of specific diseases or conditions vary considerably by region. Strengths and limitations of the literature are discussed and principles for future research in this area are proposed. Our literature review systematically documents areas of street child health that are understudied or not studied at all as well as the limitations of current research. Informed by our findings, our principles for further research can inform the future study of this vulnerable population.

Keywords: Street children, demographics, infectious diseases

*** Corresponding author: Mrs. Vinita N Jamdade,** College of Nursing, Bharti Vidyapeeth Deem University, Pune, Maharashtra, India. Email: vinita.jamdade@gmail.com

1. Introduction

A street child, as defined by UNICEF, is one "for whom the street (in the widest sense of the word, i.e., unoccupied dwellings, wasteland, etc.) More than their family has become their real home, a situation in which there is no protection, supervision, or direction from responsible adults" [1]. Although the number of children who live on the streets of the world's cities is unknown, existing estimates suggest that tens of millions of children are street-based and that their numbers are rising secondary to global population growth, the HIV epidemic, migration, and increasing urbanization [2]. The vast majority of the world's children and

of the world's street children, lives in low- and middle-income countries [3], yet existing research regarding street children and youth has overwhelmingly been conducted in high-income countries. UNICEF defines two overlapping groups of street children: on-the-street children, who are street-based but primarily sleep at home, and of-the-street children, who rarely, if ever, return home. There is general agreement in the literature that most street children are on-the-street rather than of-the-street [4, 7]. Though these terms have been widely and appropriately critiqued, they remain the most currently used and provide an important distinction.

As has been well documented, disconnection from family, community, and social capital is associated with poorer health outcomes [8, 10]. Thus, an off-the-street child may experience substantively different challenges and health outcomes than his or her on-the-street counterpart. There is a longstanding history of qualitative research regarding the survival strategies and lived experience of street children. However, quantitative research regarding the health status of both of- and on-the-street children in low- and middle-income countries is limited. As emphasized in recent reviews of adolescent health, adolescence is a critical period of development, during which many of the health-related behaviors that will affect young people both in the present and into adulthood are initiated. Investment in adolescent health has lasting impacts on a country's overall health and economic wellbeing [11].

The goal of this review is to summarize available knowledge and identify underexplored areas of the health of street children in order to encourage and inform interventions and the future research agenda regarding street children in resource-limited settings. Our approach was informed by an ecological framework, consistent with the World Health Organization's definition of health as "a state of complete physical, mental, and social wellbeing" [12]. Our review therefore included studies that examined a range of health outcomes among street children, including both traditional health indicators such as nutritional and growth status, and globally recognized, broader determinants of adolescent health, such as experiences of violence, substance use, and mental health [13].

Demographics

Children reported leaving home when they were between 6 and 16 years of age and having lived on the streets for a period of days to, more frequently, years [16, 38]. On-the-street children tended to be younger than of-the-street children (10-12 vs. 13-16 years old) [39, 44]. These data suggest that on-the-street children may grow to be of-the-street youth. However, longitudinal cohort data needed to support this hypothesis are absent. Boys were the most visible group on the street in low- and middle- income countries, constituting 50% to 100% of study samples reviewed. Where reported, of-the-street boys were often significantly older than of-the-street girls [19, 43, and 51]. Boys had generally spent more years on the street than girls, whereas girls tended to have more contact with family [46, 48]. Several studies hypothesized that street girls may have experienced more severe familial breakdown, because impoverished boys are more likely to be sent to the street by families to earn money, whereas girls are generally kept at home to help with the household [5]. Girls may also be more amenable than boys to sleep in institutions, be living with relatives, be recruited into sex work, or be in "sugar daddy" relationships with older men, all of which may render them less visible [5,24].

Structural factors affecting street children's health Children most frequently reported family conflict (including violence, parental drug use, physical abuse, neglect) or changes in family structure (death of a parent, remarriage and resulting discrimination or abandonment) as their reason for being on the street [56]. Other reasons for leaving home included poverty, learning a trade, peer encouragement, running away from a children's institution, adventure-seeking, and escaping political violence [14, 31, 36, 50, 52, 55].

Street children primarily earned money through informal economies, including working as vendors, parking attendants,

street performers, garbage collectors and recyclers, shoe shiners, sex workers, or petty thieves [17,34,37, 40,42,47,51,54,62]. Few youth reported begging as their sole source of income, though the frequency of panhandling for supplemental income varied across studies [18, 20, 35]. Money earned was typically sent to family or spent on food, entertainment, or drugs [33, 49]. The majority of participating street children were not currently in school [23, 53, and 64]. Where reported, most had ceased schooling at primary levels [58, 60, 61, and 66]. When assessed, literacy rates were low, with one study reporting lower literacy among of-the-street children than on-the-street children [15, 59, 65, 67, and 68]. Children most commonly cited poverty, needing to work, lack of interest, or migration as reasons for leaving school [69]. Girls may have been denied the opportunity to go to school [63].

Multiple studies have documented participants' poor nutritional or growth status, primarily using measures of body mass index or stunting [21, and 70]. Some studies have found that on the-street children have poorer nutritional status than on-the street children, suggesting that street children with ties to family and community have better growth outcomes, whereas others suggest that of-the-street children may fare better in their nutritional and growth status than youth on the margins between home and the street [71,72]. Of particular note is a series of studies by Panter-Brick and colleagues, who compared on-the-street not only with off-the street children but also to community controls, including both rural village children and urban, middle-class schoolchildren [74]. They found that of-the-street children fared better than on-the-street and rural children based on weight, height, and other nutritional measures. They speculated that of-the street children may be a self-selected, resilient subgroup of youth who have better access to nutritional sources on the street than in the village. Given their findings, Panter-Brick et al. concluded that "urban homelessness may represent an appropriate response to circumstances of poverty" [32].

Infectious diseases

Six studies, of which four were conducted in Asia, examined parasitic infections. Parasitic infections, including enter parasitic infections, were more prevalent among street children than no street children and among of-the-street children than on-the street children [75]. Enter parasitic infections found in street children included schistosomes, Tricuris, Ascaris, Encheliophis vermicular is, Giardia, Entamoeba, Blastocytes hominis, and Endolimax nana [76,]. One study found intestinal parasites in 85% of orphaned and of-the-street children [77].

Only one study examined the prevalence of bacterial infections among street children, diagnosing 12.3% of their sample of of-the-street children with pneumonia by chest x-ray and clinical evaluation [80]. Although malaria and tuberculosis are leading sources of morbidity and mortality in many low- and middle-income countries and disproportionately impact impoverished populations, no studies addressing malaria or tuberculosis in street children were found [78]. Several studies, primarily in Brazil and Iran, examined rates of hepatic infection among youth. One study examining hepatitis A prevalence among street children found high rates of hepatitis A virus (80.0%-92.2%) among youth, with no statistical difference in rates of antiehepatitis A virus in on-the-street versus of-the street youth [79]. Seven studies tested for hepatitis B prevalence among street children [80, 81]. Exposure to hepatitis B virus, measured by antiehepatitis B core prevalence, was more common among of-the-street than on-the-street children [41]. Three studies reported hepatitis C prevalence rates ranging from 0% to 3.5%, with one study reporting higher hepatitis C virus rates among of-the-street than on-the-street children [6, 82].

Unintentional injuries

One multinational study quantifying injuries sustained by street children found high rates of physical injury [83]. Forty percent of street children reported work-related injuries, including scratches, cuts and lacerations, burns, sprains, and amputations. Longer work

hours, working as a street performer, male gender, and older age were associated with increased risk of injury.

Burden of disease

No formal data documenting mortality rates or causes of death of street children were found in our review. Limited data were found documenting life expectancy or burden and types of chronic illness in street children. One study examined the burden of disease among street children by measuring antichymotrypsin as a marker for the inflammation due to repeated and chronic infections as well as by measuring all static loads as a marker of stress. Antichymotrypsin and all static loads were highest in housed rural village children, followed by, in decreasing order, of-the-street children, on-the-street schoolchildren, and middle class schoolchildren [73].

Health care Street children reported limited access to health care. Barriers included cost, minority status, stigmatization by providers, distrust in quality of care, and difficulty finding time to seek care because of lost earnings [16,45]. Two studies found that a majority of street youth did not seek medical help for ailments, instead ignoring their symptoms or self-medicating when ill [57]. As a measure of access to primary care, one study found that street children were one fifth as likely to have been vaccinated for measles as slum children living with their parents [19]. We found no other data regarding vaccination rates among street children. Studies examining the dental health of street children found that children's teeth were in poor condition and that children had an unmet need for dental care, particularly for caries and tooth loss [84, 85].

Discussion

Street children serve as a compelling example of the global disparity in child health. The available literature paints a picture of children who, often in response to circumstances at the structural and familial level, engage disproportionately in high risk behaviors. These risk behaviors include not only those behaviors also engaged in by youths' non-homeless counterparts (such as early sexual debut or experimentation with substances) but, more importantly, very high-risk behaviors that are not normative in any setting (such as survival sex or substance dependence). These behaviors and the exposures associated with poor shelter have resulted in disproportionate morbidity in the areas of infectious illness, psychiatric disease, reproductive health, and, perhaps to a lesser extent, growth.

Based on these findings and gaps, we offer the following principles to inform future research regarding street children in low- and middle-income nations. There is a need for standardization of definitions of street youth to allow for comparisons across studies [1]... In addition, there is a need for standardized measures of health, including measures of the social determinants of health across studies within this population [9]. Given the importance of environmental and social contexts in child and adolescent health and development, there is a need for studies that go beyond the descriptive to the explanatory, including elucidating the structural mediators for of street children's poor health outcomes. There is a need for more rigorous study design and recruitment.

Most studies reviewed relied on cross-sectional convenience samples recruited from service settings. Studies are needed that make use of more rigorous sampling and recruitment methods in order to reach less visible subpopulations of street children and youth, whose needs and health status may be significantly different from those reached by convenience sampling. Investigators would do well to learn from studies of other hard-to-reach and marginalized populations in low- and middle-income nations that are employing novel methods to sample participants and document social determinants of health and health status [86,87]. In addition, there is a critical need for longitudinal studies to answer basic questions regarding street children life course, such as whether they grow up to be street-based adults or whether being street-based is simply a rite of passage for children in the many marginalized families living in the rapidly expanding cities of low- and middle-income nations. One particular strength of the existing literature has been investigators' clear

collaborative efforts with community partners. These street-based partners frequently have longitudinal relationships with children. Continued community-based research in collaboration with such programs may facilitate the collection of longitudinal data from cohorts of street youth.

Finally, future studies would be further strengthened by the inclusion of community-based controls of none street-based children. Programs to reintegrate street children into their communities need to be developed that are appropriate to local settings and recognize the universal human rights of children [88].

Provision of safe shelter must be a primary intervention to improve the health of these children. Based on our findings, interventions such as increased access to education for street-based children, the regulation of access to inhalants, and the enforcement of laws protecting all children from physical and sexual abuse and neglect (as codified in the United Nations Convention of the Rights of the Child), are also indicated [11]. Youths' resilience and need for independence to survive under particularly harsh circumstances should be recognized. However, it is also imperative to recognize the fiduciary responsibility and shared interest of communities at the local and global level to support youth in becoming productive, healthy adults.

Studies related to nutritional status of the street children:

A cross-sectional study conducted in which the investigator explored nutritional status in school- age street children and analyzed factors associated with malnutrition with the help of a predesigned and pre-tested questionnaire, anthropometric measurement and clinical examinations from December 2010 to April 2011 in urban slums of Bareilly, Uttar- Pradesh (UP), India. The risk of malnutrition was significantly higher among children living in joint families, children whose mother‘s education was (less than or equal to) 6th standard and children with working mothers. Most of the street children in the study had poor nutritional status [89].

A study was conducted to assess the food habits and nutrients intake, and health and nutritional status of street children. The result showed the level of consumption adequacy did not meet the recommended dietary allowances i.e. with the shortage of 10-15%; this is an indication that the street children should be aware of their daily food consumption. Based on gender the percentage of female respondents was higher i.e.39%, while that of the male street children was 29%. The average weight of the street children was 40.5kg and the height was 148.3cm. In contrast, the average weight for females was 35.8kg and the height was 138.6 cm. based on the classification of nutritional status, 42.7% and 80.4% of street children were underweight and stunted respectively [90].

Another study conducted in which Of the 353 children studied, 38.2% belonged to the school-aged group, with 7% more girls than boys. There is a significant effect of area (rural vs. urban) on stunting and wasting among children. The child's sex affects stunting only. The other two variables, altitude and age, do not show a significant relationship with stunting or wasting [22] The study was conducted to describe the street activities, socio-demographic and economic characteristics and coping responses towards food acquisition of 8-15 years old Manila street children, and determine the influence of selected socio-demographic and economic factors on their nutritional status. A two-stage stratified random sampling procedure according to location and nutritional status was employed in the final selection of 163 normal and 137. Ten children from each group of street children were the subjects for the in depth study on coping responses toward food acquisition, and street survival.

A study was conducted regarding children‘s nutrition status. Data were obtained from 11723 low income families; 27% were receiving public housing subsidy, 24% were food insecure. Children of food insecure families not receiving housing subsidies had lower weight for age (adjusted mean Z score, - 0.025 vs. 0.205; P< 0.001) compared with children of food insecure families receiving housing subsidies. Compared with children in

food insecure, subsidized families, the adjusted odds ratio (95% confidence interval) for weight-for-age z score more than 2 SDs below the mean was 2.11 (1.34- 3.3) for children in food insecure, non subsidized families [91].

A study was conducted of the nutritional status of 89 school-aged children living and working on the streets of Jakarta, Indonesia was assessed. A comparison of the data from these street children showed that they weighs more and are taller than their socio-economic peers. [25]

Status related to health status of the street children:

The department of Anthropology, Case Western Reserve University, and Cleveland, Ohio 44120, USA has conducted a study to assess the growth and health status of street children in Dhaka, Bangladesh. (Jan-Feb 2007) The purpose of this study was to assess the effects of street life on the growth and health status of poor children who live and work full time on the streets of Dhaka, Bangladesh (street children), independent of the effects of poverty. The greater than-expected growth and health status of street children, compared to other poor children, may be due to biologically fit children being more likely to permanently move to the streets and/ or to remain on the streets once the move has been made [26].

Studies related to mortality and morbidity of street children

A study was conducted to examine the challenges of understanding mortality changes among street youth in New York (2009). According to cohort study conducted in Montreal, Quebec from 1995 to 2000, the mortality rate among the street youth was 921/100,000 person year. The corresponding decline in the general population was only 19% and the SMRs in cohort 1 and 2 were 11.6 (95% CI, 7.6-17.0) and 3.0 (95% CI, 1.0-6.9), respectively. The statistically significant difference between SMRs shows that the decline in the mortality was greater among street youth than in general population [27].

A study conducted in Montreal. (2004) to estimate mortality rate among street youth in Montreal and to identify causes of death and factors increasing the risk of death. Mortality data were obtained from the coroner‘s office and the Institute de la Statistique du Quebec. 26 youths died during follow up for a mortality rate of 921 per 100,000 persons- years (95% confidence intervals (CI), 602- 1350); this represented a standardized mortality ratio of 11.4. The observed causes of death were as follows: suicide (13), overdose (8), unintentional injury (2), fulminate hepatitis A (1), heart disease (1); unidentified (1). In multivariate Cox regression analysis, HIV infection (adjusted hazard ratio AZR = 5.6 ; 95% CI, 1.9-16.8), daily alcohol use in last month (AZR= 3.2, 95% CI, 1.3-7.7), homeless in the last 6 month (AZR= 3.0, 95%CI, 1.1-7.6), drug injection in the last 6 month (AZR = 2.7, 95% CI, 1.2-6.2), and male sex (AZR= 2.6, 95%CI, 0.9-7.7), were identified as independent predictors of mortality [28].

A study conducted in which 27 street youth and 27 non runaway peers responded to a questionnaire investigating history of running away, depression level, coping strategies, family history and stress. Analyses revealed that stress and depression were positively correlated for the street youth and that these youth had higher levels compared with non runaways of both. There were also differences in coping strategies: street youth were more likely to engage in acts of self-harm and to use drugs and alcohol, while non runaways more frequently resorted to productive problem solving and disclosure/discussion with someone they trust [29].

A study was conducted in which the children were aged between 4 and 17 years. (Mean 10.5 years.) 64% were males and 18% belonged to ethnic minorities. The majority (84%) had family ties. Family disintegration was mentioned as the cause for life on the streets by 36%. Child labour was reported in 38%. 16% admitted to being sexually abused. 20% were tobacco smokers. Respiratory and skin infections, and injuries incurred in road traffic accidents were the main causes of morbidity [30].

Several studies have been done on street children all over the world. However there is lack of Indian data on the same. Also the street children the world over and in India face a different economic and socio-cultural environment. Hence it would be worthwhile to explore the exact situation in the Indian context. Based on the previous studies researcher made a effect to assess the health of street children in the city of Pune which has a rich heritage and good ethical standards.

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