

Health problems among street children seeking care in the Center for Social and Preventive Medicine in Egypt

Hoda Ibrahim Rizk, Nihal Mohamed El Rifai, Hana Mohamed Aboulghar

Cairo, Egypt

Background: In Egypt, around 1 million children are on the streets. Street children's health is an issue that is not well researched. The objective of the current study was to determine the health problems of a targeted group of street children seeking medical care and to generate a hypothesis about the positive/negative role of street children care organizations.

Methods: A cross-sectional study was done on 2169 street children who sought medical care at El-Basma clinic at the Center for Social and Preventive Medicine in Cairo University Children Hospital from January 2011 to July 2014.

Results: Respiratory illnesses and skin problems were the most prevalent conditions, affecting 485 (22.4%) and 359 (16.6%) of the patients, respectively. Psychological issues and trauma were significantly higher among the adolescent group. Respiratory and gastrointestinal problems were significantly higher among children aged less than 2 years. Genital and cardiac problems were significantly higher among those referred from organizations whereas trauma was significantly higher among those coming directly from the streets. A significant proportion of children at the extremes of the studied age spectrum were coming directly from the streets. Sexually transmitted infections were rare problems.

Conclusions: Respiratory and skin diseases were the major morbidity problems among street children, especially adolescent males. Organizations afforded opportunities for access to different health care services.

World J Pediatr 2017;13(5):503-507

Key words: Egypt;
health problems;
street children

Author Affiliations: Public Health and Community Medicine Department (Rizk HI) and Pediatrics Department (El Rifai NM, Aboulghar HM), Faculty of Medicine, Cairo University, Cairo, Egypt

Corresponding Author: Nihal Mohamed El Rifai, 4 Gamal Salem Street, Doki, Cairo, Egypt (Tel: 01276333317; Email: nihal-r@hotmail.com)

doi: 10.1007/s12519-017-0028-3

Online First March 2017

©Children's Hospital, Zhejiang University School of Medicine, China and Springer-Verlag Berlin Heidelberg 2017. All rights reserved.

Introduction

The phenomenon of street children is global, with an estimated population of around 150 million across the world.^[1] In 2007, the United Nations Children's Fund announced that: "The exact number of street children is impossible to quantify, but the figure almost certainly runs into tens of millions across the world".^[2]

In Egypt, around 1 million children are on the streets. A study by the United Nations Office for Drug Control and Crime Prevention on street children in Cairo & Alexandria, Egypt, done at 2012 identified many causes of the problem, citing examples such as child abuse (82%), neglect (62%), peer pressure (36%), sensation-seeking (16%) and, having brothers and sisters in street (8%).^[3]

Unlike the situations in other countries, where a single factor may be the leading cause, the problem of street children in Egypt is arising from a combination of factors as poverty, unemployment, family breakdown, child abuse, the effect of peers, and other factors, related either to the social environment or to the personality of the child.^[4]

Life on the streets has an adverse effect on the health of children exposed to such a lifestyle, particularly on young children below 10 years. At this age, children are still dependent; so without the protection of adults, these children are vulnerable to the risk of violence. Furthermore, the developing immune systems of children are not matched to the harsh environment of street life.^[5]

Despite high levels of morbidity and mortality, street children reported multiple factors for their failure to receive appropriate treatments: limited access to health care, competing priorities, such as securing adequate food and shelter, and the feeling of being stigmatized by health care professionals. Therefore, a majority of street children did not seek medical help for diseases, opting, instead, to ignore their symptoms or, alternatively, to self-medication.^[6]

Our understanding of street children is fragmented and a body of systematic research has not yet developed on the issue.^[7] Therefore, the objective of the present study was to determine the health problems of our targeted street children and to generate a hypothesis on the positive/negative role of street-children care organizations.

Methods

This cross-sectional study was done at El-Basma Clinic (a specialized clinic dealing with health problems of street children) at the Center for Social and Preventive Medicine, Cairo University Children's Hospital, Egypt. The clinic was funded for 6 months between January and June, 2009 by the National Council for Childhood and Motherhood otherwise it is funded by donations. The study included 2169 street children 18 years old or less, who received health care at the Clinic from January 2011 to July 2014. These children visited the Clinic independently or referred from local non-governmental organizations caring for them. Of the 15 organizations that sent the children to the clinic, only 5 have shelters providing housing, food and rehabilitation. The rest of the organizations only provide daycare services. A team was formed of 5 doctors, 2 nurses and a social worker; all of them were trained by *Medicins du Monde*; a French organization specialized in dealing with street children. One of the trained doctors performed examination. Data was collected using a clinical observation sheet containing the relevant variables (personal data, anthropometric measurements, medical history, complaint, health education received, and details of referrals to hospitals or specialized clinics). Data were entered into an Excel sheet and statistically analyzed with SPSS software (Statistical Package for the Social Sciences) version 15. Numerical data were summarized as mean and standard deviation or median and range. Categorical data were summarized as frequency and percentages. Comparisons between groups with respect to numeric variables were made using the Student's *t* test for normally distributed variables and the Mann-Whitney nonparametric test for non-normally distributed variables. Comparisons between categorical variables were made by the Chi-square test or by Fisher's exact test as appropriate. All tests were two-sided. A *P* value <0.05 was considered significant.

Ethical considerations

The study proposal had been approved by the Ethical Research Committee of Cairo University Children's Hospital. To protect the privacy of street children, no full personal names were taken in the analysis. Furthermore, an informed consent was taken from all children or their caring social worker after being counseled about the aim of the study and reassured that their privacy was fully respected.

Results

Of the total children studied, 597 (27.5%) had come directly from the streets and the remaining 1572 (72.5%) were referred by hosting organizations. The median

age was 9 years (range: 1 month-18 years). Among them, 1273 (58.6%) were males and 896 (41.3%) females. The characteristics of the children by age, sex, anthropometric measurements, and exposure to health education messages are illustrated in Table 1. As depicted in the table, a significant proportion of the children who had come directly from the street were <2 years old (23%) or adolescents (46%). Of the referred cases by organizations, 53% were 2-12 years old ($P<0.001$). Two thirds (65%) of the children from the streets were males, of whom 56% had been referred by organizations ($P<0.001$). Regarding street children and children referred by institutions, 42.4% and 30.2%, respectively had weights below the 5th percentile and 19.2% and 24.2%, respectively had weights above the 95th percentile with no significant difference between the two groups. However, the proportion of street children and children referred by organizations whose body mass index (BMI) fell below the 5th percentile was 7% and 10.1%, respectively; More street children were overweight (18%) as compared with those referred by organizations (13%) ($P=0.01$).

Respiratory problems were the most prevalent problem in street children; and 485 (22.4%) children had respiratory problems, with cough in 308 (14.2%), rhinitis in 134 (6.2%), wheezing in 203 (9.4%), and fever in 45 (2.1%).

Skin disorders was the second most common health problem documented in 359 (16.6%) patients in the form of itching in 240 (11.1%), skin rash in 258 (11.9%) and wounds or scars in 66 (3%) of cases. A diversity of skin diseases was detected in the children; the most common were allergic dermatitis in 84 (3.8%), scabies infestation in 84 (3.8%) and lice infestation in 64 (3%).

Gastrointestinal problems were present in 280 patients (13%) with abdominal pain in 87 (4%) and

Table 1. Characteristics, anthropometric measurements and exposure to health education in street children according to place of referral

Items	Categories	Site of referral, <i>n</i> (%)		<i>P</i> value
		Street	Institutions	
Age	<2 y	125 (20.9)	149 (9.5)	<0.001
	2-<12 y	195 (32.7)	825 (52.5)	
	12-18 y	277 (46.4)	598 (38.0)	
Sex	Female	210 (35.2)	686 (43.7)	<0.001
	Male	387 (64.8)	886 (56.3)	
	<5th percentile	53 (42.4)	45 (30.2)	
Weight (<2 y)	5th-95th percentile	48 (38.4)	68 (45.6)	0.109
	>95th percentile	24 (19.2)	36 (24.2)	
	<5th percentile	33 (7.0)	144 (10.1)	
BMI (>2 y)	5th-95th percentile	354 (75.0)	1088 (76.5)	0.012
	>95th percentile	85 (18.0)	191 (13.4)	
	Received health education	444 (74.4)	1182 (75.2)	

BMI: body mass index.

acute gastroenteritis in 77 (3.6%). Ear, nose and throat problems were manifested in 256 patients (11.8%) with tonsillitis in 175 (8.1%) and otitis media in 78 (3.6%). Urinary problems were present in 145 patients (6.7%), mainly as dysuria due to urinary tract infection in 107 (4.9%). Musculoskeletal problems were diagnosed in 139 patients (6.4%) with muscular and bone pains in 123 (5.7%). Eye problems were found in 138 patients (6.4%) with conjunctivitis in 48 (2.2%). Tooth decay troubled 72 patients (3.3%).

Genital problems were present in 61 patients (2.8%); the number of referred from organizations was significantly higher than those coming directly from the streets [$P=0.004$, 54 (3.4%) vs. 7 (1.2%)]. Female patients attended for a variety of reasons including genital examination ($n=18$, 2%), followed by rape or sexual abuse ($n=5$, 0.6%), treatment of genital infections ($n=6$, 0.7%) or interventions for secondary amenorrhea, primary infertility or post-partum fever ($n=6$, 0.7%). Males attended the clinic for circumcision ($n=13$, 1%) or for treatment of genital infections ($n=5$, 0.4%) or undescended testis ($n=6$, 0.5%).

Thirty-three patients (1.5%) complained of exposure to multiple trauma including 16 (2.7%) who suffered such a trauma in the streets and 17 (1.1%) in organizations ($P=0.007$). Central nervous system (CNS) problems were present in 33 patients (1.5%). The complaint was psychological problems in 25 patients (1.2%). Addiction was the complaint in 14 patients (0.6%); 4 of them were less than 12 years old. Of these patients, 12 were males, and 2 females ($P=0.07$).

The health problems of the street children in the study are demonstrated according to age in Table 2. Most of the health problems were significantly higher among the adolescents. However, respiratory and gastrointestinal conditions were significantly more common among those <2 years of age.

Health problems in relation to sex are presented in Table 3. Males were significantly more affected by different health problems (trauma, musculoskeletal and psychological), whereas females were more affected by genital and dental problems.

Table 4 shows that there were no significant difference in the health problems of street children coming directly

Table 2. Percentages of studied cases according to age and common health problems

Problems	All children, <i>n</i> (%) (<i>N</i> =2169)	Age group, <i>n</i> (%)			<i>P</i> value
		<2 y (<i>n</i> =274)	2 y-<12 y (<i>n</i> =1020)	12 y-18 y (<i>n</i> =875)	
Respiratory	485 (22.4)	102 (37.2)	208 (20.4)	175 (20.0)	<0.001
Skin	359 (16.6)	27 (9.9)	172 (16.9)	160 (18.3)	0.004
GIT	280 (12.9)	57 (20.8)	109 (10.7)	114 (13.0)	<0.001
ENT	256 (11.8)	19 (6.9)	141 (13.8)	96 (11.0)	0.004
Urinary	145 (6.7)	2 (0.7)	41 (4.0)	102 (11.7)	<0.001
Musculoskeletal	139 (6.4)	8 (2.9)	37 (3.6)	94 (10.7)	<0.001
Eye	138 (6.4)	8 (2.9)	47 (4.6)	83 (9.5)	<0.001
Dental	72 (3.3)	1 (0.4)	33 (3.2)	38 (4.3)	0.006
Genital	61 (2.8)	6 (2.2)	27 (2.6)	28 (3.2)	0.615
Trauma	33 (1.5)	4 (1.5)	8 (0.8)	21 (2.4)	0.016
CNS	33 (1.5)	2 (0.7)	7 (0.7)	24 (2.7)	0.001
Psychological	25 (1.2)	1 (0.4)	7 (0.7)	17 (1.9)	0.016
Cardiac	10 (0.5)	0 (0)	5 (0.5)	5 (0.6)	0.468

GIT: gastrointestinal tract; ENT: ear, nose and throat; CNS: central nervous system.

Table 3. Percentage distribution of health problems among street children according to the sex [*n* (%)]

Health problems	All children (<i>N</i> =2169)	Male (<i>n</i> =1273)	Female (<i>n</i> =896)	<i>P</i> value
Respiratory	485 (22.4)	302 (23.7)	183 (20.4)	0.066
Skin	359 (16.6)	225 (17.7)	134 (14.9)	0.090
GIT	280 (12.9)	165 (13.0)	115 (12.8)	0.920
ENT	256 (11.8)	151 (11.9)	105 (11.7)	0.910
Urinary	145 (6.7)	98 (7.7)	47 (5.2)	0.024
Musculoskeletal	139 (6.4)	104 (8.2)	35 (3.9)	0.0001
Eye	138 (6.4)	138 (7.2)	46 (5.1)	0.048
Dental	72 (3.3)	33 (2.6)	39 (4.3)	0.025
Genital	61 (2.8)	26 (2.0)	35 (3.9)	0.010
Trauma	33 (1.5)	26 (2.0)	7 (0.8)	0.018
CNS	33 (1.5)	19 (1.5)	14 (1.6)	0.900
Psychological	25 (1.2)	21 (1.7)	4 (0.4)	0.010
Cardiac	10 (0.5)	6 (0.5)	4 (0.4)	0.930

GIT: gastrointestinal tract; ENT: ear, nose and throat; CNS: central nervous system.

Table 4. Percentage of studied cases by type of health problem and sources of referral [*n* (%)]

Health problems	All children (<i>N</i> =2169)	Street (<i>n</i> =597)	Institutions (<i>n</i> =1572)	<i>P</i> value
Respiratory	485 (22.4)	145 (24.3)	340 (21.6)	0.180
Skin	359 (16.6)	97 (16.2)	22 (16.7)	0.810
GIT	280 (12.9)	82 (13.7)	198 (12.6)	0.480
ENT	256 (11.8)	69 (11.6)	187 (11.9)	0.830
Urinary	145 (6.7)	34 (5.7)	111 (7.1)	0.250
Musculoskeletal	139 (6.4)	47 (7.9)	92 (5.9)	0.086
Eye	138 (6.4)	29 (4.9)	109 (6.9)	0.077
Dental	72 (3.3)	17 (2.8)	55 (3.5)	0.450
Genital	61 (2.8)	7 (1.2)	54 (3.4)	0.004
Trauma	33 (1.5)	16 (2.7)	17 (1.1)	0.007
CNS	33 (1.5)	9 (1.5)	24 (1.5)	0.970
Psychological	25 (1.2)	7 (1.2)	18 (1.1)	0.960
Cardiac	10 (0.5)	0 (0)	10 (0.6)	0.050

GIT: gastrointestinal tract; ENT: ear, nose and throat; CNS: central nervous system.

from the streets and those referred from organizations except in the case of genital and cardiac problems. These conditions were significantly higher among those referred from organizations, whereas trauma rate was significantly higher among those coming directly from the streets.

Discussion

The current study addressed health problems for a special vulnerable group. Respiratory problems were the most common presenting problem among Egyptian street children. Similarly, a study conducted on infectious diseases in street children in Nairobi, Kenya, reported that the most common conditions identified in the sample included upper respiratory tract illness, affecting 21.1% of subjects, and skin infections, occurring in 12.1% of children.^[8] Another Kenyan study from Eldort, found that cough was the most common symptom in street children, occurring in 28.9% of children. Upper respiratory tract infections affected 12.1% of these children, while skin diseases were detected in 50.9% of them.^[9] A review of the records of Egyptian street children demonstrated that the most common health problems were skin diseases, anemia, intestinal parasitic infection, tonsillitis and otitis media.^[10]

The extremes of age of the children were found more in the streets and this was attributable to the fact that the children below 2 years were the offspring of street families whereas those aged 12 years and more had escaped from organizations to live on their own. A significantly high percentage of females at the clinic had been referred by organizations ($P<0.01$). A previous study of street children in developing countries reported that, because of disruption of social norms, street girls had poorer outcome than boys. The differential impact of street life on boys and girls may be the reason underlying the policy of organizations to host and protect females.^[11]

A greater percentage of street children had BMI significantly above the 95th percentile than those referred from organizations ($P=0.012$). This may be due to the greater ability of street children as compared to organizationally-hosted children to source cheap food products to eat such as carbohydrates and fats with low nutritive value. Previous studies stated that a significant percent of street children experienced malnutrition.^[9,12,13] The fact that around 75% of the group we studied had received health education during follow-up at El-Basma clinic may explain why malnutrition was detected in a smaller proportion of our study population as compared with previous studies.

Respiratory and gastrointestinal tract problems were significantly more common among younger children <2 years old ($P<0.001$). Globally, these two conditions

are the main causes for morbidity and mortality in children less than 5 years of age. A recent study done in 2013 reported that, worldwide, 6.3 million children died in their first 5 years of life; 51.8% of them died of infectious causes as pneumonia and diarrhea.^[14]

Skin problems, musculoskeletal conditions, trauma, CNS problems and psychological issues were significantly more common among adolescents. Feldmann and Middleman stated that sexually transmitted infections, pregnancy, trauma, and dermatologic infestations were just a few of the health problems with which these adolescents commonly presented and that such somatic problems were compounded by high rates of drug and alcohol abuse as well as depression and suicide.^[15] Furthermore, Taylor-Seehafer documented that emotional distress, alcohol, drug abuse, risky sex, and victimization were major health risks for homeless youth.^[16]

The study found that musculoskeletal conditions, trauma and psychological problems were significantly more common among males. Winterdyk stated that male youths were responsible for committing 80% of all youth crimes.^[17] Consistent with our results, a cross-sectional study reported that such homeless youths reported a higher prevalence than their non-homeless counterparts of the following problems: family dysfunction, suicide attempts, substance use, and behavioral problems.^[18]

The present study showed that genital problems were significantly more common among females. In accordance with our study, a previous study found that the incidence of sexually transmitted infections was significantly higher among females than among males due to inconsistent condom use, multiple partners, and sex with older partners.^[19]

The strengths of the study include: 1) It focused on a highly vulnerable group; 2) The enquiry relied on recorded cases of those seeking care; consequently, it provided information about sensitive data on sexual abuse and addiction of street children that could not be collected by survey; 3) It highlighted the gender issues that faced female street children who were not empowered to seek care especially with respect to sensitive genital-related problems. Referral by organizations hosting street children was the only opportunity for females to access health care; 4) The study could generate hypotheses for further testing on a number of issues: the role of institutes for street children's care, dealing with gender issues, child abuse, and addiction.

The limitations of the study were as following: data were from one clinic for street children who had opportunities to access health care. Consequently, the findings cannot be generalized as "problems of street children in Egypt".

In conclusion, respiratory and skin diseases were

the major morbidity problems among street children, especially among adolescent males. Organizations providing care for street children afforded opportunities for access to health care services by female children with genital problems. Large scale longitudinal studies are needed to aid the development of proper action plans for solving the problems. Programs targeting street children should be developed and the organizations hosting them should be supported to provide access to health facilities for health education, treatment and follow up.

Funding: None.

Ethical approval: The study proposal had been approved by the Faculty of Medicine, Cairo University Ethical Research Committee. In order to protect the privacy of street children, no full personal names were taken in the analysis.

Competing interest: There is no conflict of interest to declare.

Contributors: Aboulghar HM designed the study. Rizk HI and El Rifai NM participated in conduction and analysis of the study. Rizk HI performed the statistical analysis and participated in drafting the manuscript. El Rifai NM drafted the manuscript. All authors read and approved the final manuscript.

References

- 1 Community Children World Wide Resource Library. Street children. http://pangaea.org/street_children/kids.htm (accessed August 20, 2013).
- 2 de Benítez ST. State of the world's street children: research. London: Consortium for Street Children, 2011.
- 3 UNICEF. A new approach to Egypt's street children. www.unicef.org/sowc/egypt_30616.html (accessed August 3, 2012).
- 4 UNICEF. Children in street situation. www.unicef.org/tdad/index_56502.html (accessed July 10, 2015).
- 5 Kwamboka P, Nganga Z, Mbakaya C, Mwangi M. Health problems and associated factors among street children in an urban slum, Nairobi, Kenya. www.africanchildinfo.net/index.php (accessed April 10, 2015).
- 6 Thapa K, Ghatane GS, Rimal S. Health problems among the street children of Dharan municipality. *Kathmandu Univ Med J (KUMJ)* 2010;7:272-279.
- 7 Human Rights Council. Report of the United Nations High Commissioner for human rights on the protection and promotion of the rights of children working and/or living on the street. http://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session19/A-HRC-19-35_en.pdf (accessed April 10, 2015).
- 8 Timona Alumbasi BL. Infectious diseases of street children in Nairobi, Kenya. *Int J Infect Dis* 2012;16S:e7.
- 9 Ayaya SO, Esamai FO. Health problems of street children in Eldoret, Kenya. *East Afr Med J* 2001;78:624-629.
- 10 Weinreb L, Goldberg R, Bassuk E, Perloff J. Determinants of health and service use patterns in homeless and low-income housed children. *Pediatrics* 1998;102:554-562.
- 11 Aptekar L. Street children in the developing world: a review of their condition. *Cross-Cult Res* 1994;28:195-224.
- 12 Unger A, Riley LW. Slum health: from understanding to action. *PLoS Med* 2007;4:1561-1566.
- 13 Mufune P. Street youth in Southern Africa. *Int Social Sci J* 2000;52:233-243.
- 14 Liu L, Oza S, Hogan D, Perin J, Rudan I, Lawn JE, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2015;385:430-440.
- 15 Feldmann J, Middleman AB. Homeless adolescents: common clinical concerns. *Semin Pediatr Infect Dis* 2003;14:6-11.
- 16 Taylor-Seehafer MA. Positive youth development, reducing the health risks of homeless youth. *MCN Am J Matern Child Nurs* 2004;29:36-40.
- 17 Winterdyk JA. Issues & perspectives of young offenders in Canada, 2nd ed. Toronto: Harcourt, 2000.
- 18 Votta E, Manion IG. Factors in the psychological adjustment of homeless adolescent males: the role of coping style. *Am Acad Child Adolesc Psychiatry* 2003;42:778-785.
- 19 Noell J, Rohde P, Ochs L, Yovanoff P, Alter MJ, Schmid S, et al. Incidence and prevalence of chlamydia, herpes and viral hepatitis in a homeless adolescent population. *Sex Transm Dis* 2001;28:4-10.

Received October 27, 2015

Accepted after revision April 10, 2016