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SM Journal of Public Health and Epidemiology

Research Article

Health Diagnosis through Drawings in a Tanzanian Child Population

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Article Information

Received date: Nov 11, 2018
Accepted date: Nov 19, 2018
Published date: Nov 26, 2018

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Keywords Environmental health; Health perception; Children's drawing; Tanzania

Abstract

Population's health is related to the social context in which its members live. The aim of this study is to investigate the Newlands (Tanzania) children perception have of the environmental factors that may affect their health, in order to facilitate the design of Health Promotion training programs in the future. The study uses children's drawing technique, based on the observation and analysis of different factors that appear on a child's drawings. The results shows a high index of images of violence and malnutrition as consequences of social, economic, religious and cultural phenomena that Newland's children population might engage with. Two different trends were observed: a female one associated with correct eating habits, and masculine one where unhealthy habits were prevalent. The results obtained provide a wide spectrum of ideas that help design Environmental and Health Promotion courses, in order to train the child population to anticipate and manage environmental health risks.

Introduction

Health, social context and childhood

Population health is determined by environmental and social conditions and, therefore, it is directly related to the place where a person resides [1]. According to Benach and Muntaner: "Poor countries, marginal districts and disadvantaged citizens who suffer multiple social discriminations, have less access to economic resources, less power in decision-making processes, worse healthcare systems and are more exposed to risk factors which worsen their health, being those personal, social or environmental" [2].

In other words, one of the main consequences generated by poverty is the lack of good health conditions in specific communities. According to Pernalete [3] "there are no other needs to cover when there is no health". These bad conditions have a greater impact in earlier stages of life. This is the reason the why it is necessary to take care of such elements which may affect negatively a person's health during their first years of live, from a holistic point of view involving physical as well as mental, social and emotional health.

Children are our future; therefore their healthy development should be a prime political approach in each society. Also, some of the main health problems in unprivileged environments such as malnutrition and infectious diseases are mostly preventable. Unfinished agendas around Millennium Development Goals (MDG) aimed at reducing infant mortality, should remain a priority with a specific focus on those countries and populations with a greater need [4].

Children's Drawing

In relation to poverty and child health, it is relevant to highlight the importance of the work that can be done at educational centers. In order to create and design training programmes aimed at an infant population, focused on preventing and learning to manage those factors that could interfere negatively in their health, it is essential to know what kind of elements from the context in which children live could have an impact on their health. A suitable technique for such diagnosis is children's drawing technique that would allow designing training courses according to the findings obtained in regards to basic knowledge and socio cultural values. Highlighted the importance of community's values and beliefs in the effectiveness health promotion workshops [5].

Drawing allows breaking through linguistic barriers and comparing those emotions and realities that can be found between people with different backgrounds and skills [6]. It is considered a universal language, and it is recognised as a natural way of communication, which allows children to express their thoughts and sentiments through a more relaxed way than what a verbal medium would entail in a child environment [7].

Drawing, in addition to being the manifestation of a symbolic function, is considered to be the main communication channel between a person and the outside world, especially during childhood; in Anne Cambier's [8] words: "the drawing is a transposition or representation about something

connected to the reality". It is for this reason that nowadays an analysis or observation of a drawing is considered a possible diagnosis method in child psychology literature and practices [9].

As suggested with emotional ties and social relations, artistic abilities are connected to child development growth. It is for that reason that there are different classifications of drawings depending on the characteristics or qualities of such evolutionary development. Lowenfeld [10] established six different stages of artistic development that engage with a wide range of ages, from two years old to puberty. They follow the progression of both expressive as well as the plastic functions of the child:

- **The scribble stage:** two to four years old. Uncontrolled line with an absence of a representation of space.
- **The preschematic stage:** four to seven years old. Emotions are now depicted on drawings between what is desired to represent and what is finally represented.
- **The schematic stage:** seven to nine years old. Use of drawing elements like base lines, geometric lines or artistic experience repetition.
- **The dawning realism:** nine to eleven years old. More consciousness and rigidity in the line, as well as the introduction of a specific plane as well as superposition of elements as a representation of space.
- **Pseudo-naturalistic stage:** eleven to thirteen years old. More realism on the drawing and deployment of three-dimensional technique for the representation of space.
- **The decision stage:** thirteen to seventeen years old. Critical consciousness development and different perspectives from the child. There are three subgroups: visual (focused on the close environment), haptic (focused on the emotional level) and intermediate (characteristics from both of the previous subgroups).

Infant drawing can be used as a resource to make a diagnosis about the child's development in isolation or, at the same time, it could be linked to other topics such as what has been chosen for this article: health diagnosis.

The aim of this study is to develop a community health diagnosis through child drawings in Newlands (Tanzania). In order to do so, it is necessary to explore both favorable and harmful health factors according to the perception of Newland's child population.

Methods

Context of study and participant population

Fieldwork took place in Tanzania, in a town in the Kilimanjaro region called Newlands. A cultural, sports and social centre can be found in town, which is run by NGO of Spanish origins: Born to Learn. Newlands lacks any other educational or leisure resources, which then translates into the use of non-teaching hours for helping with housework or being on the streets.

Fieldwork was carried out during two weeks between the 7th and 18th of May 2018. It focused on school groups from Kindergarten and Primary Education (Standard 1-6) from Newland's cultural centre (Born to Learn). The centre is organized based on the children's cognitive development rather than their age, which means that those kids who have not been previously scholarised and therefore do not have any academic background comprise the Kindergarten group. A placement test needs to be taken when accessing the rest of the groups. It is for this reason that children between three form Kindergarten groups and eight years old; Standard 1 is currently formed by children between six and eight years old, and so on until reaching the last year of Primary Education, Standard 6, for which the maximum age is set at fifteen years old.

Implementation process: Child drawing as resource

The teachers from the centre as well as an interpreter for the translation between Kiswahili and English were necessary for the collection of data. A teachers meeting was held prior to the collection of data, during which the objectives of the study as well as their specific responsibilities were explained. The issues covered in it were adapted to the comprehension level of both teachers and students who were going to be involved.

The time intended for the activity was 45 minutes, and each child was provided with the necessary material: a white piece of paper, a pencil and some crayons. As a starting point for the activity, two questions were given to the children, both in English and Kiswahili, which they then had to answer through their drawings.

- Which elements do you consider favorable for your health?
- Which elements do you consider harmful for your health?

Once the estimated time was over, the children were requested to write on the paper both their name and gender. At the same time, together with the interpreter, they were individual asked about those elements that had an unclear meaning on the drawing - the explanation was written next to the object for its consideration in the subsequent analysis. At the end, all drawings were assembled according to the group in which they had been done. 71 drawings were collected between the groups from Kindergarten, Standard 1, Standard 2, Standard 3 and Standard 4. It should be highlighted that four students from advanced levels, two of them from Standard 5 and the other two from Standard 6, wanted to be added to the study so they produced and delivered the same material than the rest of students.

Drawing analysis

In order to analyze the drawings both quantitatively and qualitatively, methodologies suggested by Torres-Nerio [11] and Cabezas Lopez [12] have been used, as well as the stages of artistic development created by Lowenfeld10.

For the quantitative analysis, the elements that appeared on the drawings were counted in order to conduct an analysis of frequency. A description of each one of them was then created, to then classify the different ones in categories dependent on both their frequency as well as the nature of their meaning.

On the other hand, for the qualitative analysis, all drawn elements were described and a direct relation to health issues was then drawn, to then link them to a specific stage of artistic development depending on the actual age of each particular child.

Results

Quantitative analysis

Elements that appear more frequently under the category of favorable health factors belong to the field of nutrition, in particular food (78.79%) and water (38.75%) (Table 1). These are followed by an element related to the environment, flowers (28.72%), and another one connected to social relations (18.65%), especially playing (27.30%).

In regards to the perception of harmful health factors, the most prevalent element is directly linked to nature and the regional fauna. Snakes (27.89%) appear related to the element of tree climbing (16.15%), making a total percentage of 44.04%.

Two elements linked to nutrition are quite similar in percentage: lack of water (23.75%) and bad health habits such as the consumption of harmful substances like tobacco (23.56%). Those behaviors that entail violence such as presence of machetes, sticks, axes and scene of physical abuse are also present (11.50%).

Table 1: Number and percentages of favourable and harmful health elements by gender.

Type of Perception	♀		♂		Total	
	Nº	%	Nº	%	Nº	%
Perception of Favourable Elements						
Food	31	80'43%	25	77'15%	56	78'79%
Water	26	33`9%	31	43`6%	57	38'75%
Flowers	27	31'7%	21	25'74%	48	28'72%
Playing	28	37'96%	13	16`64%	41	27'3%
Social Relations	3	14%	3	23'3%	6	18'65%
Hygiene	14	22`9 %	13	13'55%	27	18'22%
Vehicles	2	22'16%	1	8'33%	3	15'24%
House	1	6'5%	2	9'6%	3	8'05%
Family	2	10%	-	-	2	5%
Legs	1	6'5%	-	-	1	3'25%
Perception of Harmful Elements						
Snakes	30	27'47%	27	28'31%	57	27'89%
Lack of Water	19	27'95%	9	19'5%	28	23'72%
Tobacco	1	16`6 %	11	30`53%	12	23'56%
Lack of Car	3	7'6%	5	28'16%	8	17'88%
Tree Climbing	19	18%	15	14'3%	34	16'15%
Lion	-	-	5	28'83%	5	14'41%
Scorpion	2	6%	4	22'83%	6	14'41%
Violence	10	11`47%	12	15'27%	22	13'37%
Hunger	5	6`7%	6	17'5%	11	12'1%
Sticks	9	9'98%	2	14%	11	11'99%
Machete and Axe	13	13'08%	4	5'15%	17	9'11%
Poison	-	-	6	16`63%	6	8'31%
Lack of Bed	2	8%	-	-	2	4%
Electricity	1	2'6%	-	-	1	1'3%

Regarding the sex of the population, it can be noted that the feminine gender leans towards drawings of different topics from those of the masculine one. The concept of good health, in other words, favorable health factors, is directly linked to nutrition (80.43%) and social relations (37.96%) for girls. Although the boy shares a focus on the importance of good eating habits (77.15%), they lean towards the presence of water (43.60%) as an essential element for good health. The biggest differences between both sexes was present on the category of harmful health factors, in which the feminine gender decided on those essentials for an optimum health state such as lack of water (27.95%) and unfavorable social relations with a high presence of violence (11.51%). On the other hand, the masculine gender leaned more towards cultural elements such as the consumption of harmful substances such as tobacco (30.53%) or cultural factors related to the practices of the region, which would then explain the presence of felines such as the lion (28.83%), one of the most common elements (Table 1).

Qualitative analysis

Female gender appeared more thoughtful and detailed in their drawings than the male gender, who draw in a more simple and concise way. Related to the topic chosen by each collective, the female gender leaned towards favorable health factors that are related to hygiene and nutrition while the male gender highlighted harmful health factors at a social and cultural level.

It is necessary to highlight that the chronological evolution (the expected relation between the age of the subject and a particular child graphic development) does not correspond to Lowenfeld's classification. The drawing shows earlier stages of artistic development than those that would be expected from the children's ages.

Drawings from different ages have been selected with the aim to show an example of the influence of culture, social relations and the development of artistic, cognitive and expressive abilities from this group of children (Figure 1).

The (Figure 1) concern two children of the same biological age and different artistic capacity. In the figure on the left, some harmful health elements can be appreciated on the right side, such as worms. Also, on the left side of the drawing, it is possible to observe favorable health elements linked to nutrition, such as an apple.

The drawing on the right, which has been made with more precision, the need for water for a favorable health state can be appreciated on the top side, while violent scene can be identified below, which is classified as a harmful health element within the social relations category.

Regarding Lowenfeld's classification, the first drawing would belong to the scribble stage, while the second one could be linked to the schematic stage (Figure 2).

As it can be seen at the top of the drawing (Figure 2), the chosen favorable health elements are related to nutrition, portraying a high variety of food, presence of water and a relation with the environmental through the flower.

At the bottom of the drawing, one can identify unfavorable health elements linked to the regional cultural customs, as it was indicated on the frequency table. Some of them are the presence of animals

Figure 1: Drawings made by two eight years old boys. Newlands, 2018.

Figure 2: Drawing made by nine years old boy. Newlands, 2018.

such as lions, snakes or scorpions. In a different size but with the same importance, violence takes place.

This drawing could be classified in the schematic stage according to Lowenfeld, which belongs to the actual age of the child (Figure 3).

Both drawings (Figure 3) belong to the feminine gender, although great differences can be seen between them. The drawing on the left portrays on its right side a person who is playing, which links to the idea of social relations as a favorable health element. On its left side, a person next to a tree is then considered a harmful health element.

The drawing on the right, which was also made by a girl, does not represent any harmful health element, while it goes into quite detail when focusing on such elements that are considered positive for an optimum health state, such as those nutrients which can be obtained from fish, eggs and milk.

According to the characteristics suggested by Lowenfeld for the classification of the stages of artistic development, the drawing on the left would belong to the preschematic stage, while the one on the right would be linked to the dawning realism (Figure 4).

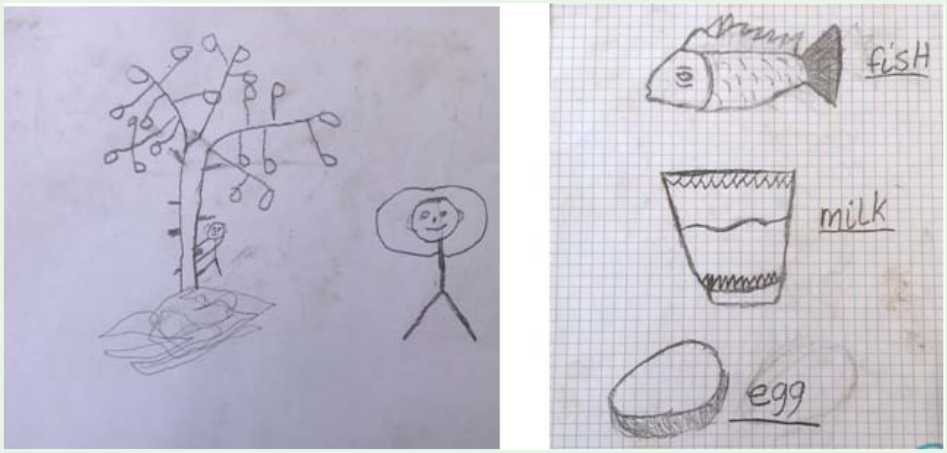

Figure 3: Drawings made by two ten years old girls. Newlands, 2018.

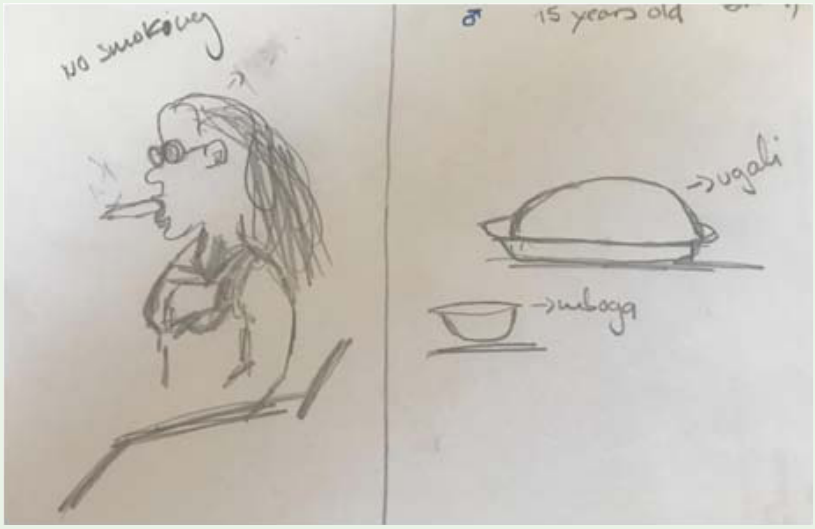

Figure 4: Drawing made by fifteen years old boy. Newlands, 2018.

This drawing shows food and drink as favorable health factors; these elements were drawn on the right side. On the left side, as an unfavorable health factor, a person who is consuming harmful substances (smoking) is being portrayed.

The child's artistic development corresponds to the same development stage which was suggested by Lowenfeld: the decision stage. More specifically, it would correspond to the intermediate stage because it has some features that are easily identified with both the visual subgroup and the haptic one.

Discussion

According to the results of the community health diagnosis, the health perception of this Tanzanian child population is highly influenced by those health habits related to nutrition and the environment, as well as both inter and intrapersonal relations determined by their own culture. A good health state is then not dependent only on individual habits, but rather on the sum of the physical, emotional and social state, which is highly linked to the environment, as shows the obtained results.

Another result to be highlighted is that relation between the age of the subject and the artistic development depicted on the drawings does not correspond to the one suggested by Lowenfeld in his classification. One of the possible explanations for such phenomenon could be the different level of cognitive and expressive maturity that children experiment due to their social context, the stimuli they receive and the relations they establish with their environment.

After analyzing the results obtained through this fieldwork on the perception of favorable and harmful health factors through children's drawing technique in this Tanzanian population, Daniel P. Goleman's ideas sound appealing: "the drawing act is therapeutic in itself, and indicates the process of trauma control"[13]. In other words, child drawing is an educational, psychological and/or social tool which allows analyzing and interpreting the perception children have of a specific topic.

There are few investigations that use children's drawings to carry out a health diagnosis. Two of the more recent one focus on three communities: one from Hassilabied, Morocco [14] and two from Mexico [11]. It is possible to observe great similarities between favorable health factors in all three populations.

In the study carried out in Morocco as well as the ones done in two populations in Mexico, the percentages of the presence of healthy foods are quite similar. In Mexico, those vary depending on the study population, which means that the drawings originating from Cuatlamayán, rural-indigenous population, elements that are referring to the healthy food were present on a 58.30% of the cases. However, for the urban-marginalized population originating from Tercera Chica, this data either corresponded to the percentage of 76.20%. In disadvantaged social contexts, food is perceived as a key health element in the infant populations.

In the rural region of Tanzania, a high level of violence is perceived as the most important unfavorable health factor (11.50%). This violence related element also appears with high prevalence in the Mexican populations of Cuatlamayán and Tercera Chica (18.45%). At the same time, when analyzing drawings by gender, these violence elements (sticks, machetes, etc) are drawn by girls (11.51%) and boys (11.47%) on a similar frequency. During childhood, one out of four children suffers from physical abuse, having very serious and lasting effects that threaten their welfare throughout their lives, even persisting in the adulthood [15]. For this reason it is essential to prioritize policies as well as local interventions that protect these high risk populations.

Another result worth pointing out it is that 22.99% of the infant population includes playing and/or social relations as a favorable element for a good health state. This indicate a integral concept of health, in such way that it no longer entails only good eating habits or lack of illness, but it is rather also deeply connected to a development of social and communication skills. Therefore, what has been mentioned before about the link between playing and a healthy life can then is interpreted as one of the most essential elements in order to achieve such level of optimum health status in this population.

Cognitive development and the different experiences lived by a child, in the relation with the culture and the context where they live, are key factors for the identification and expression of elements, actions and feelings that are harmful or essential for their health at physical, social and mental level.

Amartya Sen [16] understand poverty as a multidimensional phenomenon whereby necessarily consider not only the monetary dimension but also life conditions or welfare terms. Lastly, poverty and health are associated; the poverty condition corresponds to privation level in the development of the person capacities and freedom [17].

Conclusion

This project had as objectives to explore how the perception of health by a child population was represented through drawings. The results show that these boys and girls have a broad and clear perception about this concept, which does not uniquely reside in a balanced diet. Elements referring to social factors such as violence, or interpersonal relationships such as playing, are key elements in the child population health. Authorities and institutions should implement the relevant health protection and health promotion measures in order to transform the welfare of these vulnerable young populations in a priority. Environmental and social position the poor infant population in a disadvantage health situation. Poor people have worse health outcomes than better-off people, and this association reflects causality running in both directions: poverty breeds ill-health, and ill-health keeps poor people poor [18]. Therefore, it is necessary to break this circle, taking care of child populations that are the future.

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