Health and nutritional status of children 6 to 12 years old in one congested area of Bangkok

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Background   :   *Although the morbidity rate of children 6 to 12 years old is slightly lower than that see in preschool children, it is a period of major cognitive advances and social development. Children in congested areas are more vulnerable to poor health and have less opportunity to be supported for total development.*

Objectives   :   *1. To explore health and nutritional status among children aged 6 to 12 years old,*

2. To assess levels of self-esteem and intelligence quotients (IQ) among this group.

Setting   :   *Wat Makok Congested Community , Bangkok.*

Research design   :   *Descriptive study*

Materials   :   *87 children 6 to 12 years old*

Methods   :   *1. General physical examination by physicians*

2. Oral health examination by dentists

3. Use weight per height to assess nutritional status

4. Use Colored Progressive Metrices (by Raven JC) to assess IQ

5. Assess self-esteem by Hare's assessment form

6. Use interview forms for other data

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Results   :   *The most common health problem of the 6 to 12 years old children was*
                            dental caries. The next most common problem was accidents. Health
                            behaviors that should be strengthened were hand washing before eating
                            and teeth brushing twice a day. Some also had adult health risk behaviors
                            such as alcohol consumption and smoking. 28.9 % had weight for height
                            ratios under the standards and 15.4 % were obese. 52.3 % had an IQ of
                            less than 90.

Conclusion   :   *The health problem patterns among the study children were the same as*
                            in other areas but the sizes of the Bangkok congested area problems
                            were larger. Hence, it is necessary to improve total health and develop-
                            ment of these vulnerable children so they may reach their full potential
                            and rights.

Key words   :   *Children 6 to 12 years old, Health status, Nutritional status.*

ปัญหา : ถึงแม้ว่าเด็กอายุ 6-12 ปี จะเป็นวัยที่มีอัตราป่วยน้อยกว่าเด็กปฐมวัย แต่ก็ เป็นวัยที่มีพัฒนาการด้านสติปัญญาก้าวหน้าและพัฒนาการด้านสังคมเพิ่ม มากขึ้น เด็กที่อยู่ในชุมชนแออัดมักมีความเสี่ยงสูงต่อการเจ็บป่วย และมี โอกาสน้อยที่จะได้รับการส่งเสริมพัฒนาการอย่างรอบด้าน

วัตถุประสงค์ : 1. เพื่อศึกษาปัญหาสุขภาพและภาวะโภชนาการของเด็กอายุ 6-12 ปี
2. เพื่อศึกษาระดับการเห็นคุณค่าของตนเองและระดับเชาว์ปัญญาของเด็ก กลุ่มดังกล่าว

สถานที่ทำการศึกษา : ชุมชนแออัดวัดมะกอก กรุงเทพมหานคร

รูปแบบการวิจัย : การศึกษาเชิงพรรณา

กลุ่มศึกษา : เด็กอายุ 6-12 ปี จำนวน 87 คน

วิธีการศึกษา : 1. ตรวจร่างกายทั่วไปโดยแพทย์ เพื่อค้นหาปัญหาสุขภาพ
2. ตรวจช่องปากโดยทันตแพทย์
3. ชั่งน้ำหนัก วัดส่วนสูง เพื่อหาภาวะโภชนาการ
4. วัดระดับเชาว์ปัญญาโดยใช้ Colored Progressive matrices ของ Raven JC.
5. วัดระดับการเห็นคุณค่าในตนเองโดยใช้แบบวัดของ Hare
6. ใช้แบบสัมภาษณ์ที่ผู้วิจัยสร้างขึ้นสำหรับข้อมูลอื่น ๆ

ผลการศึกษา : ปัญหาสุขภาพที่พบมากที่สุด คือ ฟันผุ รองลงมาคือ อุบัติเหตุ พฤติกรรม สุขภาพที่ควรเร่งรัด คือ การล้างมือก่อนรับประทานอาหารและการแปรงฟัน เด็กบางคนมีพฤติกรรมที่เสี่ยงต่อสุขภาพ เช่น ดื่มแอลกอฮอล์และสูบบุหรี่ เด็กส่วนใหญ่มีการเห็นคุณค่าตนเองในระดับปานกลาง ร้อยละ 28.9 มี น้ำหนักต่อส่วนสูงต่ำกว่าเกณฑ์ และร้อยละ 15.4 เป็นเด็กอ้วน และร้อยละ 52.3 มีระดับเชาว์ปัญญาต่ำกว่า 90

สรุป : ลักษณะปัญหาสุขภาพพบเช่นเดียวกันกับเด็กในพื้นที่อื่น ๆ แต่มีขนาด ปัญหาค่อนข้างสูง ดังนั้นจึงควรให้ความสนใจกับเด็กกลุ่มเหล่านี้โดยส่งเสริม ให้เด็กได้พัฒนาเต็มที่ตามศักยภาพ และตามสิทธิที่พึงได้

คำสำคัญ : เด็กอายุ 6 -12 ปี, สุขภาพ, สภาวะโภชนาการ

The middle childhood (6 to 12 years old) is a period of relatively steady growth but without striking or remarkable physical changes. [1,2] The average gain in weight during these years is about 3 to 3.5 kg per year, and in height approximately 6 cm are added each year. At the end of this period the brain has reached nearly adult size. [2] As such, it is a period of major cognitive advances, a period when patterns and habits are established, a time of the beginning of formal schooling, and a stage of industry development. [1] Although physical changes in children during this period are not remarkable, it is a time of vigorous physical activity. Most of the significant motor skills are developed at this time, such as increasing speed and strength, better and better coordination, and greater skill at specific physical tasks. [2] The morbidity rate of this age group is slightly lower than what is seen in preschool children. The most common illnesses are mostly respiratory tract infections. However, injuries from accidents rise in this age group- broken arms or legs from falls, cuts and abrasions from active play, injuries from fires or auto accidents. Furthermore, nutritional disorders like obesity increase in the middle childhood which can lead to significant longterm health problems. [1]

With the relocation of a large portion of the child's life from the home to the school environment, children begin to increasingly live independently. Various social and personality development occurs [1,2] for example, their self-concept becomes more abstract, more comparative and more generalized; the relations with friends become more reciprocal in which generosity and trust are important elements; relationships with parents become less overtly affectionate but the strength of the attachment is still strong.

The rapid growth of economic development of the country in the past few years has driven populations to seek a better standard of living in the cities. Unfortunately, not every dream comes true. Most of them live in conditions of deprivation such as congested areas, poor sanitation, and a polluted environment. [3] At the same time, urban growth also generates environmental health hazards affecting the well-being of the people, particularly children, who are the most vulnerable. Hence, this study aimed to explore the health status, nutritional status, health behavior, self-esteem, cognitive development, and behavior problems among children aged 6 to 12 years in one congested area of Bangkok City.

Materials and Methods

The study was conducted in Wat Makok congested community. It was purposely selected in order to consolidate the presence of the Faculty of Public Health, Mahidol University, in Wat Makok community as a strategy to support the academic activities in health promotion. The study team contacted the community committee to organize a cross-sectional survey on health status and other health related conditions of children aged 6 to 12 years. The data collection schedule was set according to suggestions of the committee. The committee helped by informing the children's families about the objectives of the study and motivating both parents and eligible children to go to the community health center where all of the survey activities were performed. The activities included a general physical examination by a physician, measurement of weight and height by a nutritionist, oral health examination by a dentist, and assessment of cognitive development by a clinical

psychologist. Child self - esteem was determined by use of an interview form. The self- esteem components were adapted from Hare's study and consisted of home self-esteem and school self - esteem[4] The reliability of this instrument was tested by use of an Alpha Coefficient and $\propto$ equaled 0.79. A pediatric symptom checklist adapted by Kasemsinsup N, et al was used for rough screening for child behavioral problems.[5] The checklist was short and relevant to the attention span of child's caregiver. A beam balance scale with 100 grams fine scale was used to weigh the children and a metal tape with 0.5 centimeter fine scale was used to measure the children's height. For the cognitive development assessment, the authors used the Colored Progressive Matrices of Raven JC. to measure the level of intelligence quotient. There were two sets of assessments, one for children age 5 - 11 years old and the other for children aged over 11 years.

All children aged 6 to 12 in the community were encouraged to participate in the study. According to the current population survey of this community, there were 184 children 6 to 12 years of age. Data was collected over the weekends of February and March 1998. The data were analyzed by frequency, measurement of central tendency and measurement of dispersion.

Results

● General characteristics of the children

Eighty seven children from the age of 6 to 12 who agreed to participate were interviewed. Among them, 55.2 % were 6-9 years old and 44.8 % were 10-12 years old. Nearly half were the first child, 41.2 % were the second or third child and the rest were the

fourth or above. Most of them (81.6 %) lived with their biological parents. Regarding their transportation to school, 29.9 % used public buses, 19.5 % used a family motorcycle, 17.2 % used a family car, 14.9 % used motorcycle taxis, and only 11.5 % used a school bus. When asked them about future occupations, most boys stated that they would like to be a military officer whereas most girls would like to be a doctor or a teacher. Business people, nurses, hairdressers and singers were occupations mentioned only by girls, and only the boys mentioned traders, football players, workers, pilots, engineers, managers and firemen. The boys spent their leisure time playing sports and watching television, while the girls watched television and read cartoon books. (Table 1)

● Child self-esteem

Hare's self - esteem assessment form has 20 questions (10 questions for home self esteem and the other ten for school self - esteem) with a 4 - point rating scale (4 marks for strongly agree, 3 for agree, 2 for not agree and 1 for strongly not agree for the positive statements and vice versa for the negative ones). The total score is 80. The children were divided into three groups with different level of self-esteem by mean and standard deviation. Most of them (66.7 %) had moderate level of self-esteem, 17.2 % had low self-esteem and 16.1 % had high self-esteem. The mean score of total self-esteem was 61.99, standard deviation was 6.59 and the minimum and maximum scores were 43 and 77, respectively. Regarding the home and the school self-esteem, the distribution was more or less the same. (Table 2)

Table 3 shows the level of self-esteem by gender. Among girls, 25.6 % had high level of self -

esteem, but among boys was only 8.3 %.

● Child health behavior

Table 4 shows some health risk behaviors of the target children. These include consumption of alcohol 6.9 %, smoking, reading pornographic books or magazines,and using marihuana, 2.3 % each.

Fortunately, no one reported use of amphetamine drugs or using any weapons to harm other people.

Regarding the children's personal hygiene, some of them did not have proper practices especially the most significant one - washing hands before eating food. Only 57.5 % did it frequently and 42.5 % did it sometimes or even never. (Table 5)

Table 1.   General characteristics of children aged 6 to 12 years by gender.

General characteristics	Male (48)		Female (39)		Total (87)	
	n	%	n	%	n	%
● Age (years)						
6-9	27	(56.2)	21	(53.8)	48	(55.2)
10-12	21	(43.8)	18	(46.2)	39	(44.8)
● Birth order *						
First child	24	(51.1)	18	(47.4)	42	(49.4)
Second or third child	18	(38.3)	17	(44.7)	35	(41.2)
Fourth and above	5	(10.6)	3	(7.9)	8	(9.4)
● Live with						
Biological parents	38	(79.2)	33	(87.6)	71	(81.6)
Relatives	1	(2.1)	2	(5.1)	3	(3.5)
Biological father and step mother	2	(4.2)	1	(2.6)	3	(3.5)
Biological mother and step father	0	(0.0)	0	(0.0)	0	(0.0)
Adopt parents	1	(2.1)	0	(0.0)	1	(1.1)
Biological mother	4	(8.3)	2	(5.1)	6	(6.9)
Biological father	1	(2.1)	1	(2.6)	2	(2.3)
Others	1	(2.1)	0	(0.0)	1	(1.1)
● Means of transportation to school						
Walk	5	(10.4)	0	(0.0)	5	(5.8)
Public bus	12	(25.0)	14	(35.9)	26	(29.9)
School bus	3	(6.3)	7	(17.9)	10	(11.5)
Family car	12	(25.0)	3	(7.7)	15	(17.2)
Taxi motorcycle	4	(8.3)	9	(23.1)	13	(14.9)
Family motorcycle	11	(22.9)	6	(15.4)	17	(19.5)
do not go to school	1	(2.1)	0	(0.0)	1	(1.1)
● Activities during leisure time* *						
Watch television	22	(45.8)	27	(69.2)	49	(56.3)
Read cartoon books	17	(35.4)	22	(56.4)	39	(44.8)
Play sport	24	(50.0)	17	(43.6)	41	(47.2)
Play video game	11	(22.9)	2	(5.1)	13	(14.9)
Others	7	(14.6)	5	(12.8)	12	(13.8)

*Two cases were missing ,   ** % of each activity is calculated from total n. of each group.

Table 2. Level of self-esteem by type of self - esteem.

Level of Self-esteem	Home Self-esteem		School Self-esteem		Total Self-esteem	
	n (87)	%	n (87)	%	n (87)	%
Low (< $\overline{X}$-S.D.)	12	13.8	15	17.2	15	17.2
Moderate ($\overline{X}$ ±S.D.)	57	65.5	57	65.5	58	66.7
High (>$\overline{X}$ + S.D.)	18	20.7	15	17.2	14	16.1
$\overline{X}$ (S.D.)	29.25 (3.69)		30.22 (3.70)		61.99 (6.56)	
Min - Max	18 - 37		23 - 39		43 - 77	

Table 3. Level of self - esteem by gender.

Level of Self-esteem	Male (n=48)	Female (n=39)
	n (%)	n (%)
Low (< $\overline{x}$-S.D.)	12 (25.0)	3 (7.7)
Moderate (< $\overline{x}$ ±S.D.)	32 (66.7)	26 (66.7)
High (> $\overline{x}$ + S.D.)	4 (8.3)	10 (25.6)

Table 4. Child's health - risk behavior.

Health-risk Behavio	% Do not perform	% Perform
Smoking	97.7	2.3
Drink alcohol	93.1	6.9
Use weapon to harm others	100.0	0.0
Read/see pornographic book	97.7	2.3
Watch pornographic video	98.9	1.1
Inhale Tinner	98.9	1.1
Use marihuana	97.7	2.3
Use amphetamine drugs	100.0	0.0

Table 5. Children's personal hygiene.

Personal Hygiene	% Frequently	% Occasionally	% Never
Take a bath at least two times every day	94.3	4.6	1.1
Shampoo hair at least two times a week	69.0	24.1	6.9
Brush teeth at least two times a day	71.3	24.1	4.6
Wash hands before having food	57.5	33.3	9.2
Wash hands after using toilet	71.3	21.8	6.9
Wear shoes every time going out	78.2	16.1	5.7

• Child health status

Within the prior six months, most of the children (83.9 %) had not had any serious illnesses that needed hospital admission. The rest had been in in-patient units for dengue hemorrhagic fever, acute appendicitis and fever of unknown origin. The most common health problem of the children of this age group was dental caries (57 cases). Other health problems were skin infection (5 cases), otitis media

(1 case) and muscular hypotonia with mental retardation (1 case). Only 31.0 % were considered generally normal. Most of them (93.0 %) had normal visual acuity and 2.3 % had abnormal visual acuity which required correction for one eye and 4.7 % for both eyes. (Table 6)

The most common types of accidents among these children were cut wounds (41.4%), near drowning (23.0%), and falls (20.7%). (Table 7)

Table 6. Children's general health.

Items	n (87)	%
History of hospital admission during the past 6 months		
No	73	83.9
Yes	14	16.1
General health status assessed by physician		
Normal	27	31.0
Abnormal	60*	69.0
Visual acuity (by using Snellen chart) (n = 85)		
normal both eyes	79	93.0
abnormal one eye	2	2.3
abnormal both eyes	4	4.7
Disability		
No	86	98.8
Yes (from muscle hypotonia with delay development)	1	1.2

* Among these group, 57 cases had dental caries, 5 cases had skin lesion, one case had muscle hypotonia with delay development, and one case had otitis media. (Some children had more than one problem.)

Table 7. History of accidents.

Type of Accidents	% No	% Yes
-fall with open wound	79.3	20.7
- fall from high place	88.5	11.5
- near drown	77.0	23.0
- car/motorcycle accident	85.1	14.9
- burn/scald	83.9	16.1
- electrical burn	83.9	16.1
- cut wound	58.6	41.4
- gun wound	100.0	0.0

The most common health service units for minor illness were government hospitals and drug stores. Some went to private medical clinics and very few went to BMA public health centers. (Table 8)

Ninety three of the children aged 6 -12 years received oral examinations. Table 9 shows their oral health status. The most common oral health problem was caries of deciduous teeth (60.2 %). The next were gingivitis, calculus and caries of permanent teeth respectively. Only 19.4 %had no problem of oral health.

● Child behavioral problems

The primary caretakers were asked to assess the child's behavior by using a modified Pediatric Symptom Checklist (PSC). There were 34 items with a 3 - point rating scales : 0 for never, 1 for sometimes, 2 for often. The total score was 68. A total score of 19 or less was counted as a normal condition. The standard PSC has 35 items, but one item omitted from this study was about irribalility and anger. [2] The findings revealed that 75 % of the children were within normal ranges and 25 % had a total score of 20 and above. The mean score of the group was 14.93 with 7.66 standard deviation, and the scores ranged from 1 to 39. (Table 10)

Table 8. Medical care for minor illness.

Medical Care	n	%
Buy drug from drug store	29	34.9
Go to private medical clinic	18	21.7
Go to BMA Public Health Center	1	1.2
Go to government hospital	34	42.2
Total	82	100.0

Table 9. Oral health.

Items	n (93)	%
Calculus		
No	71	76.3
Yes	22	23.7
Gingivitis		
No	54	58.1
Yes	39	41.9
Caries of deciduous teeth		
No	19	20.4
Yes	56	60.2
Do not have deciduous teeth	18	19.4
Caries of permanent teeth		
No	74	79.6
Yes	17	18.3
Do not have permanent teeth	2	2.2
Overall oral health status		
normal oral health	18	19.4
caries only	31	33.3
gingivitis only	5	5.4
calculus only	2	2.2
abnormal of all three forms	11	11.8
abnormal of two forms	26	28.0

Table 10. Pediatric Symptoms Checklist (PSC) scores.

PSC Score	n (84)	%
$\leq$ 19	63	75.0
20 and above	21	25.0
$\bar{x}$ 14.93 S.D. 7.66		
Min 1 Max 39		

● Child nutritional status

Ninety seven children aged 6 to 12 were assessed for nutritional status by weight for height. Of the 97, 55 were boys and 42 were girls. According

to the standard weight for height table of the Department of Health, Ministry of Public Health (1987), 55.7 % of the children had normal nutritional status, 28.9 % were below standard, and 15.4 % were obese. Regarding gender, there were more obese boys than girls (20 % versus 9.5 %), whereas the percentages of those under nutritioned was quite equal. (Table 11)

● Cognitive assessment

Only 84 children received I.Q tests. The results showed that 45.3 % had normal I.Q. levels (90 -109), 29.7 % sub - normal levels (80 - 89), 15.4 % borderline and 7.1 % had an I.Q. less than 70. Only two girls or 2.4 % had an I.Q. above the normal level (110-119). The mean I.Q. of the group was 88.45 and the S.D. was 11.58. (Table 12)

Discussion

Oral health was the most common health problem among the children aged 6 -12 years old especially dental caries in more than one tooth and gingivitis. This is the same as the findings of the Fourth National Survey of Oral Health Situation in 1994 which showed that 11.0% of 6 year old children had caries of their permanent teeth, and only 14.7% of the children 12 of years of age had no caries, and 75.3% of them had gingivitis.[6] According to the Eighth Health Development Plan, school - age children should have a mean DMFT (d = dental caries, m = missing, f = fillings, t = teeth) of not more than 1.5 teeth, and less than 50 % of children should have a problem of with gingivitis.[7] Hence, the oral health situation of the study community needs to be improved. Another

Table 11. Nutritional status by gender.

Nutritional Status	Boys		Girls		Total	
	n	%	n	%	n	%
Under standard	16	29.1	12	28.6	28	28.9
Normal	28	50.9	26	61.9	54	55.7
Obese	11	20.0	4	9.5	15	15.4
Total	55	100.0	42	100.0	97	100.0

Table 12. Number and percent of children by gender and I.Q. Level,

I.Q. Level	Male		Female		Total	
	n	%	n	%	n	%
< 70	3	7.0	3	7.3	6	7.1
70 - 79	6	14.0	7	17.1	13	15.4
80 - 89	12	27.9	13	31.7	25	29.7
90 - 109	22	51.1	16	39.0	38	45.3
110 - 119	-	-	2	4.9	2	2.4
Total	43	100.0	41	100.0	84	100.0

health problem is myopia of which a few cases were found and need correction. None of the children had louse infestations, goiter or hearing deficits. The National School Health Survey in 1995 revealed that among children of primary schools, 3.3% had abnormal visual acuity, 3.2% had hearing deficits, and 11.6% had louse infestations.[8]

Regarding accidents, cut wounds and falling are very common and correspond with the study of Jungthirapanich.[9]Since the community is situated on the main road, car accidents can increase if preventive measures are not instituted. Drowning also has to be prevented since there is a canal nearby. No bicycle accidents is reported because the land area is not suitable for riding a bicycle. As we know, children aged 6 to 12 years old are prone to accidents according to their growth and development and it is the leading cause of death of this age group. [10]

Some practices regarding personal hygiene were not done regularly such as washing hands, shampooing hair and brushing teeth. A few children reported having some ill - health behavior that may lead to future abnormal behavior.

There are four big government hospitals near the community where most local people seek medical care. Drug stores are also popular because of their accessibility and availability. Very few go to a BMA Public Health Center because of the distance. There was no reported use of the community health post which was established by the District Office and has a trained volunteer.

Concerning the children's behavioral problems, one fourth had potential problems. The problems mostly were fidgety or unable to sit still, acting as if driven by a motor, and being distracted

easily. However, such actions can be normal for a child at this age, but the parents do not understand them.[1,2] Child development and the needs of every age group should be introduced periodically at family and community levels.

School - age children have the ability to evaluate themselves and perceive others' evaluation of them. As a result, self - esteem becomes a central issue.[1] This study revealed that a high proportion of children with only moderate levels of self - esteem. Since self - esteem plays an important role in making a child engage in healthy behavior, building self-esteem should be continually strengthened. [4,11-13]

Around 45 % of children in this study had nutritional problems, either under or over standard. The figure is quite high compared with the nutritional surveillance system among children aged 5 -14 years which showed that only 10.5% were under nourished. [14] The figure is far beyond the target established in the 8th Health Development Plan.[6] The situation of obesity corresponds with the study of Mo -suwan L. et al. in Hadyai District. [15]

It is quite interesting that around 52 % of the children had a sub - normal I.Q. level. This figure is quite high compared with the study of Meksupa A. and Nuchprayoon T. [16] It might be explained that the children were not familier with the cognitive tests. Nevertheless, the situation may be true as most children are not effectively stimulated by their parents.

In conclusion, most children aged 6 to 12 years in the study community had oral health problems, only moderate personal hygiene, and moderate self - esteem. Girls, in higher proportion than boys, had higher self - esteem. Some children had a history of accidents, and cut wounds was the most

common cause. Some had inappropriate personality traits . Nearly half had nutritional problems either under or over nutritioned.

Recommendations : The following should be emphasized:

1. Preventing oral health problems and accidents

2. Creating leisure and productive activities for children

3. Improving child's self-esteem and correcting behavioral problems

4. Encouraging proper personal hygiene

5. Improving children's nutritional status

6. Enhancing cognitive development

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