J Ayub Med Coll Abbottabad 2003;15(1)

CHILDHOOD STUNTING IN RELATION TO ADOLESCENT LIVING ENVIRONMENT AND RESILIENCE: A FOLLOW UP STUDY IN LAHORE, PAKISTAN

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Background: Stunting, as a manifestation of deprivation in early childhood, is a common problem among young Pakistani children. Poverty and lack of resources may predispose a child to maladjustment in the grown-up society. *Resilience* has been studied in young children to ascertain how the children cope with the challenges in life. The aim of the investigation was to study differences in growth, socio-economic situation and resilience between adolescent boys who had been stunted or normal in height at the age of five years. **Methods:** Using both quantitative and qualitative study designs, the study areas were an urban slum area and a village outside Lahore, Pakistan. All boys (n=36) had been followed from birth to 5 years of age in an earlier epidemiological study conducted at the Dept of Social and Preventive Paediatrics, King Edward Medical College, Lahore and were identified for follow up at 12–15 years of age. **Results:** Those who were stunted at 5 years were also shorter as adolescents than those who were normal in height at 5 years of age. Resilience, i.e., the combination of the adolescent's emotional abilities, his access to emotional and family support and view of himself was interestingly not heavily influenced by earlier malnutrition. **Conclusions:** Despite the hardships faced by the young adolescent boys, living in poor socio-economic situations, are capable of displaying resilience despite being stunted.

Keywords: Adolescent boys, Stunting, Resilience, Pakistan.

INTRODUCTION

The Early Child Health Project in Lahore, Pakistan was started in 1984. The project was collaboration between King Edward Medical College (KEMC) in Lahore, Pakistan, Karolinska Institute, Stockholm, Sweden and the Göteborg University, Göteborg, Sweden. The aim of the project was to do a ‘community based prospective study to get accurate information about child health determinants’ from four different socio-economic areas of living representing different degrees of urbanisation in and around the city of Lahore[1].

Many parameters were studied including: growth and development, nutrition, clinical genetics, infectious diseases, immunology and psychosocial aspects. The studies showed differences between the village and the urban slum. For example, higher income per capita in the urban slum, higher illiteracy among mothers and fathers in the village, a generally higher status of the father’s occupation in the urban slum and also better sanitary conditions in the urban slum[2]. There were also differences in stunting at the age of 24 months; 54% of the children in the village were stunted (defined as below minus two standard deviations from median height for age of NCHS reference population), compared with 26% in the urban slum[3].

The aim of our investigation was to study the differences between adolescents from a rural and an urban background and to study the differences between adolescents who were either stunted or normal in height at the age of five years at a 7–9 years follow up. The main positive aspects and problems of an adolescent's life in a village and in an urban slum area were investigated using both quantitative and qualitative methods to understand the concept of *resilience*[4].

MATERIAL AND METHODS

The study was divided into two parts, a quantitative part involving 36 children between 12 and 14 years of age and a qualitative part consisting of in-depth interviews with eight of these boys.

The 36 boys had all previously participated in the Early Child Health Project up to the age of five years[1]. Children stunted or not stunted at the age of five years were selected matched by age and area of living. In the village of Halloki (40 kilometres outside Lahore), 22 adolescent boys were identified. Eleven of these boys were stunted at 5 years of age and the rest of 11 were not stunted at this age. From Gowalmandi, the urban slum, 5 stunted and 11 not stunted adolescent boys were identified. Because of the cultural traditions of Pakistan, we were unable to include girls in the study.

Quantitative Study

Height was measured with the child standing barefoot against a straight wall, with feet together and head, back and heels touching the wall. A measuring tape was used. The boys wore clothes but no shoes. Questions were asked about the years of schooling, still attending school, if finished ten years of school and wanted to continue studying after the initial ten years. In some cases, these questions were answered by other family members.

In addition, information about the boys from their birth to the age of five was used from the database of the Early Child Health Project[1]. The status of these children in terms of whether they were stunted or not, was not disclosed until all analyses were completed.

Qualitative study

To study the resilience, in-depth interviews were carried out with four previously stunted boys in the Department Clinic and two each of previously stunted and not stunted boys living in village Halloki.

The concept of resilience is defined as 'the human capacity to face, overcome and be strengthened by or even transformed by the adversities of life'[4]. This concept has been developed by the International Resilience Project[5] and the question has primarily been what factors in a child's environment are important for a child to become resilient. Their international applicability makes the group's work particularly important to us. The outcome has been a list of features that contributes to resilience within a child. The features have been constructed in a simple manner, which makes them easy to use. They are written down in a model of I have, I am and I can (Table-1), reflecting the support the child gets from his environment, what the child thinks about himself and what social and personal skills the child has.

Eight boys were interviewed using the questionnaire constructed using above model. These interviews took between 50–90 minutes to complete. All the interviews in the village were made at the health centre near the children's home. Three of the interviews in the urban area were made at the Department of Preventive Paediatrics and one interview was made in the home of the child. All the interviews were made exclusively with LB and NE, an interpreter and the child present. The interpreter was a student of engineering from Lahore.

Table-1: The features of Resilience as used in our study.

I have	**I am**	**I can**
People around me I trust and who love me, no matter what.	A person people can like and love.	Talk to others about things that frighten me or bother me.
People who set limits for me so I know when to stop before there is danger or trouble.	Glad to do nice things for others and show my concern.	Find ways to solve problems that I face.
People who show me how to do things right by the way they do things.	Respectful of others and myself.	Control myself when I feel like doing something not right or dangerous.
People who want me to learn to do things right by the way they do things.	Willing to be responsible for what I do.	Figure out when it is good time to talk to somebody or to take action.
People who help me when I am sick, in danger or need to learn.	Sure things will be alright.	Find somebody to help me when I need it.

RESULTS

Quantitative study

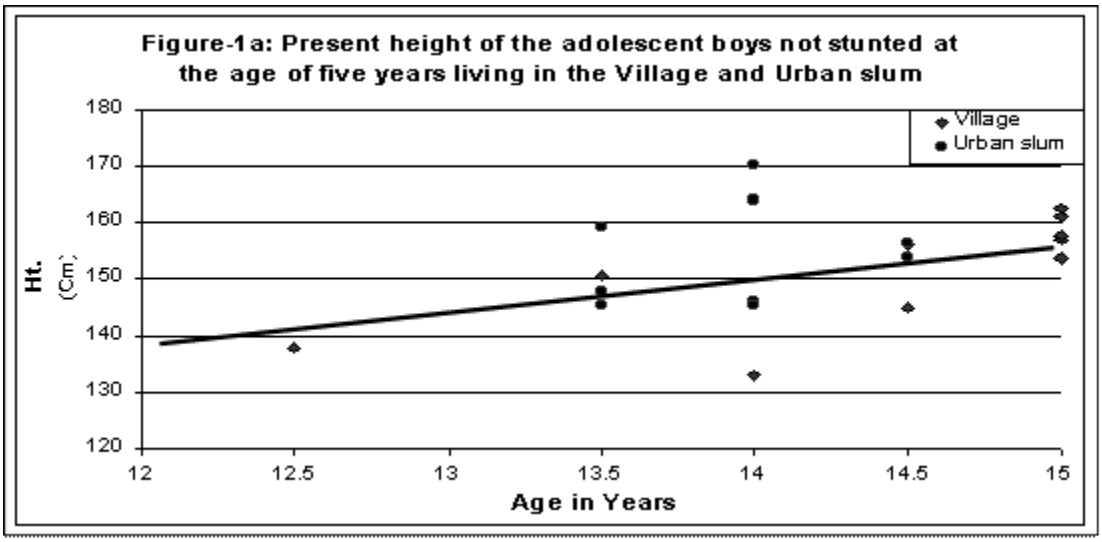
The present length of the boys and the comparison with NCHS reference standard[6] for stunting are presented in Fig. 1a and 1b. Most of the boys who were stunted at five years of age were still below the 5th percentile at the present age. The results on how many boys would have liked to finish ten years of school and how many wanted to continue their studies after that are shown in Fig. 2a, 2b and 3a, 3b.

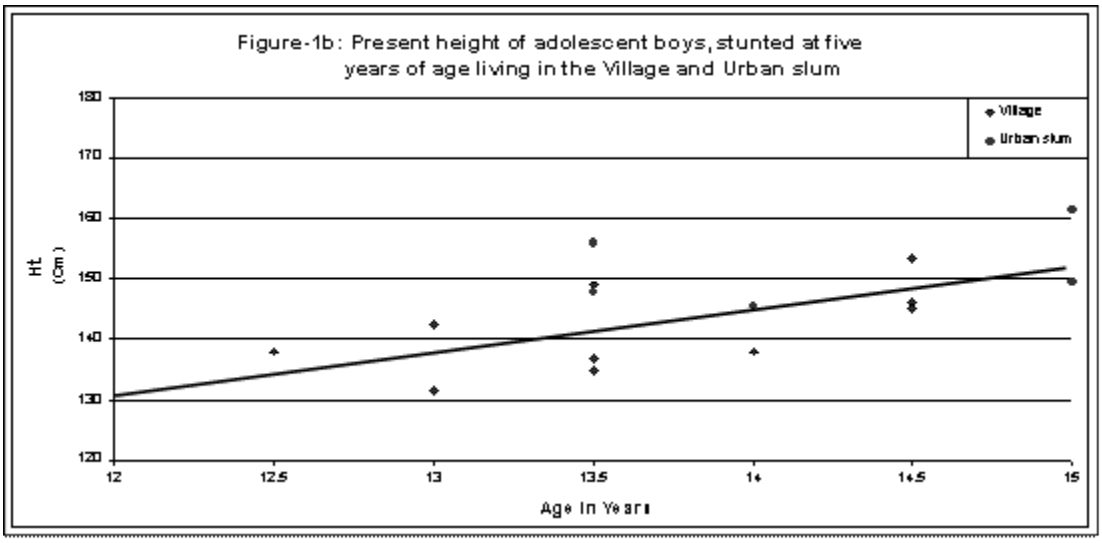
Qualitative interviews

Three of the 4 boys who lived in the urban slum and were stunted at five years of age and one boy from the village who was stunted at this age showed 'high' resilience. One boy each in the non-stunted group from the village showed a 'medium' and 'low' resilience. Following are the summaries of two out of the eight in-depth interviews. Most important aspects of the child's life and our total impression of the child during the interview and reflections about the child's situation are also included. After each summary we have looked into each feature of resilience and given the marks of yes, no, yes/no and the symbol '?'. The true names of the children have been omitted.

Interview with a 14½ years old boy previously stunted, living in Halloki:

He has eight brothers and sisters. Two brothers are working and two sisters are married and live elsewhere. The rest of the family share their house with his four uncles and their families. He has been to school for two years and can only read and write his own name. He is now learning to become a carpenter in a workshop in the village. His working hours are between seven in the morning and six in the evening, six days a week. Then he goes for reciting Quran. Eats and usually sees his family for half an hour to one hour before going to bed each day. His father works as a herdsman and his mother is a housewife. In the future, he would like to work with machinery, as his brother does, and also as a carpenter at the same time. Generally he seems to be a happy child, which also is the impression you get when you see him in the street.



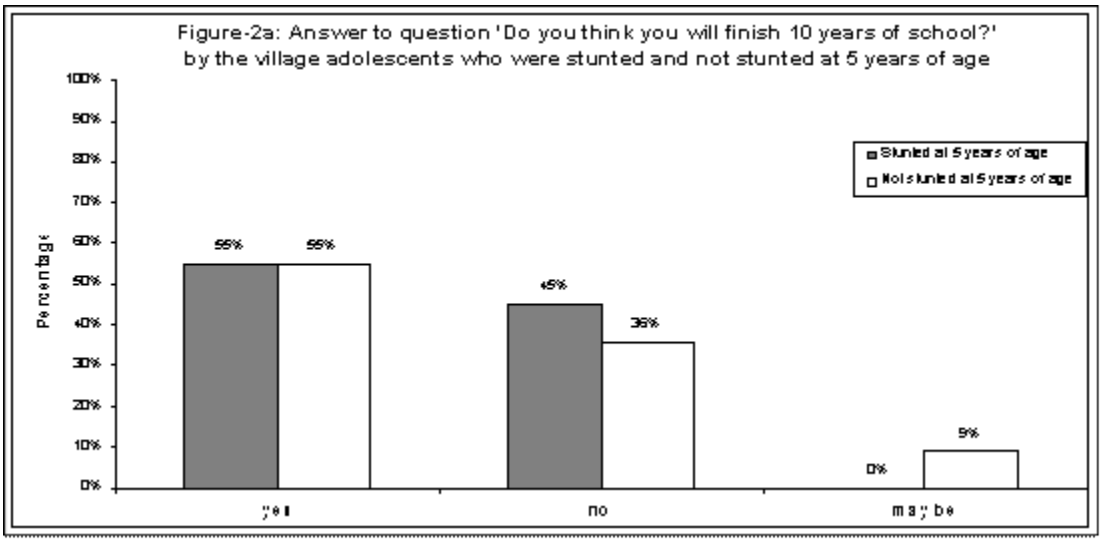


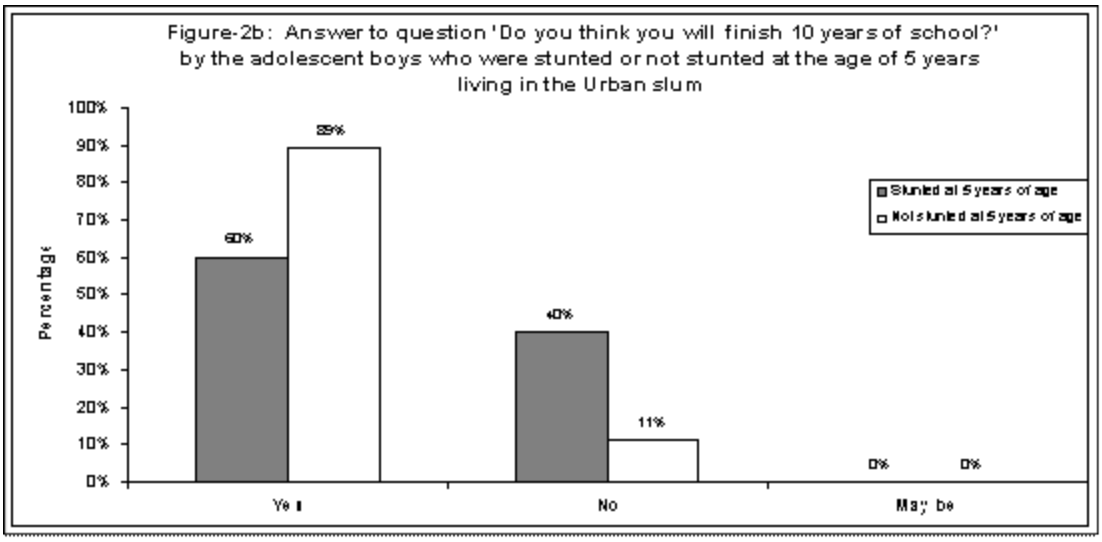
Interview with 14½ years old boy, not previously stunted living in Halloki **in a family with three younger sisters, one younger brother and his parents. The father works as a police officer in Lahore and the mother is working at home. He likes to socialise with his family and spend most of his spare time with them. Since one year back, he only goes to a Maddrassa (Quran School) for one and a half hours per day. The decision to stop school was made by his parents since he was teased and beaten by other boys in school and sometimes beaten by the teacher. He wants to finish ten years of school to become a police officer like his father. He gets 'mental attacks' ten to eleven times per month. He is very worried and afraid of the attacks and says that it feels like 'evil spirits come into him'. The impression we get of the boy is that he was slow in understanding and somewhat depressed.**

The interviews were taped and subsequently written down. A summary was prepared where observations of the child's situation and how he appeared during the interview were noted. An estimation of the resilience was made for each child by following the features of resilience above. For each of these features we have made the marks of yes, no, yes/no and the symbol '?'. Yes or No convey the information that the child has or has not the specific feature of resilience. Yes/no lies in between and signifies that the child has some degree of this feature but not to a full extent. A question mark meant that there has not been enough information available. Since the above features are not exact measure of the whole child, we assessed the child as having a high, medium or low resilience.

DISCUSSION

Some striking factors are seen when comparing the health situation between the boys in the village and the urban area. Factors like inadequate sanitary conditions, higher illiteracy rate and lower level occupations among the village children make them different from the urban slum children[3].



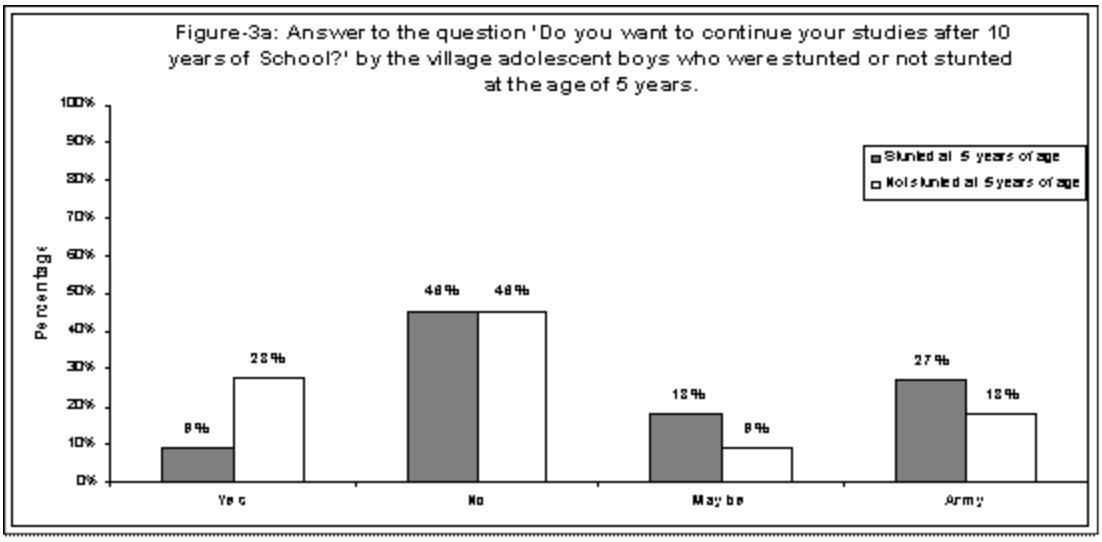


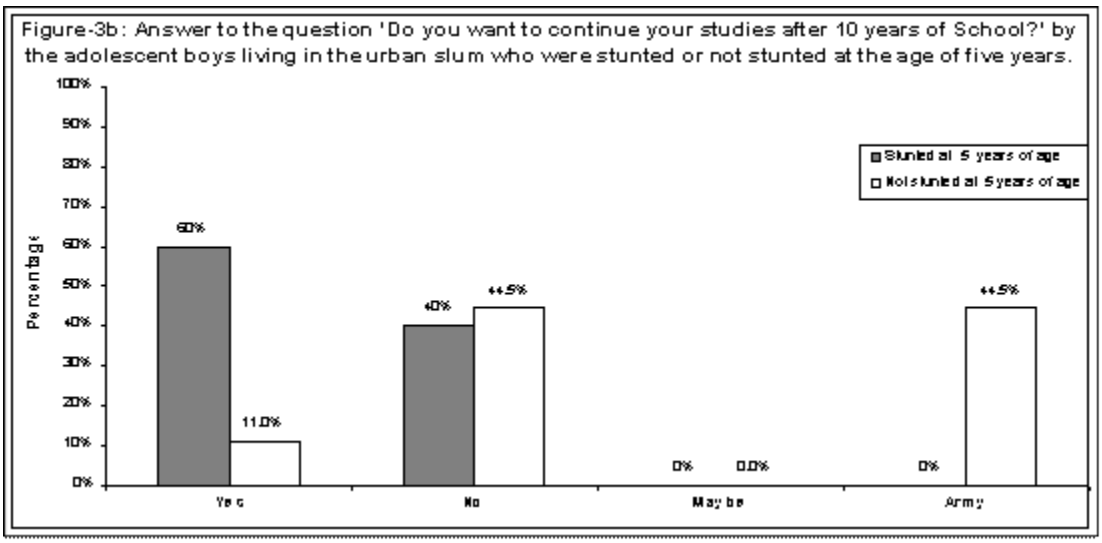
A study in Jordan[7] has shown similar risk factors. Child losses were related to large family size, overcrowding, maternal illiteracy and unskilled fathers. All these parameters mentioned above agree very well in our study with the situation of the village boys[1].

Another evidence for the harder conditions in the village was found when looking at present height. A much higher proportion of adolescent stunting was found among the village boys compared with the urban group. Almost none of the boys stunted at the age of five had caught up in length. A study on adolescents in Kenya[8] has shown that an absence of catch up in length from childhood to adolescence is mainly attributed to malnutrition. It is reasonable to assume the same mechanism in our area of study.

Looking at schooling, one can also see considerable differences between the village and city area. The ones who drop out of school have, in both groups, a lower family income than those who stay in school, suggesting that the length of schooling in most cases was well correlated to the family's financial situation.

Beating children up by the parents was more or less the norm. Most of the boys had a strong opinion about beating and thought that it was not good. Almost all of them considered beating as a problem. In a review about child abuse by Coohey and Braun, some important determinants for child abuse are listed. The probability that an adult will abuse its child is increased the fewer the emotional resources (companionship, persons who listens to the adult, help in decision-making,) the adult receive, the number of stresses experienced and the exposure of violence towards herself[9]. The risk factors for child abuse in a study from Bogotá, Colombia[10] showed consistent results with research from the West suggesting that the risk factors for child abuse may be relatively alike in different cultures. The Bogotá study associated child abuse among other things with a low level of education, perceived stress, substance abuse, lack of social support and history of childhood physical and sexual abuse.





In Pakistan, the economic situation in most families is also very poor and the father is the one responsible for earning the family income. The unfriendly working conditions, low salary and long working hours surely create frustration and often the father is absent from home for a greater part of the day. Coming home late, there is limited time for the, often great, number of children in the family. This may affect his own well being which subsequently decides how interested he is in participating in the life of his children. This together with exposure to child abuse or physical punishment in his own childhood may all contribute to a higher prevalence of child abuse, physical punishment and neglect.

One of our original questions was whether stunting in childhood influenced the resilience of the adolescent. Our results, however, show very interestingly that childhood stunting and a high adolescent resilience is not necessarily a contradiction. The children with a high resilience in our group were all much more extrovert than the ones with low or medium resilience and could find

friends easily, having a bigger group of friends in which no friend in particular is considered the best. However, it was very heartening to find that the boys, in general, have a bright view of the future. These views could, in some way, be realistic but they seem to be nothing more than dreams, often because of scarce economic resources.

One striking finding shows that having a high resilience and the help of good surroundings means that you can overcome fear of disadvantages. In most cases, the adolescents in our study had to work, but they worked for long hours and many days a week so that they don't get enough spare time. However, under the existing socio-economic conditions, it is fair to say that these boys are given a good opportunity to learn a profession and at the same time, most of them enjoy their work. At the same instance, it is sad to see that they are forced into the world of grownups at such an early age and they don't have enough time to spend with their friends. Resilience needs to be promoted throughout the growth of a child.

Resilience in 14½ years old, previously stunted boy living in Halloki

I have	**I am**	**I can**
Yes. He has a caring family and good friends. Yes. His family cares for him and nothing shows that he is left alone. He has a schedule in his life (work and Quran School) and his parents seem to keep track of what he is doing. Yes. He looks up to his father and his elder brother and wants to become like them. Yes. He has responsibilities in his work and his brother has encouraged him to start earning money to help the father. Yes. Even though he generally keeps things to himself he can go to both his parents for help and about his friends he says 'Whatever I say, they will do it for me'.	Yes. He describes himself as a 'nice child' and he is a popular person within his group of friends. When playing cricket he is the captain of the cricket team. Yes. He is worrying about his father's situation and wants to start working himself so his father can stay at home. Yes/No. He says: 'Sometimes I fight…First they fight then I fight back' and says that he never starts a fight himself. Seeing him another day with his friends making a lot of noise when we are interviewing another child gives the impression that he can probably be pretty naughty and do things not always so nice towards others. Yes. Says he always tell his parents if he does something very bad. Yes. Definitely. He says that in five years 'It (life) will be very nice' 'We three brothers will work as carpenters and will be living a happy life'. He also says that in five years time he will be rich.	Yes/No. He can talk to his parents if he has a big problem, but says: 'I usually don't tell anyone' (when having a problem). He doesn't talk to his brothers and sisters about personal problems and says "I usually don't like to discuss family problems with my friends and in the house I don't discuss problems about my friends". ? Yes/No. Says that he's never the one starting a fight but he seemed to be able to do some naughty things when being away from the Swedish medical students. Yes/No. He doesn't talk so much about his problems and prefers to keep them to himself but when something big is bothering him he usually does talk to others and is able to get help. Yes/No. He has a big and caring family and good friends. On the other hand he often keeps problems to himself and doesn't want to discuss friends' problems in the house and vice versa.

Resilience grade: High

Resilience in a 14½ years old boy, not previously stunted living in Halloki

I have	**I am**	**I can**

Yes/No. Although his father beats him, he seems to feel that his parents love him. He only got one friend but on the other hand this seems to be a really good friend. Yes/No. His parents help and tell him what is right and wrong but on the same time his father beats him and his father hasn't enough time to talk to him. No. His parents don't seem to have enough time for him, his siblings are younger than him and he doesn't go to school anymore. No. During the year he has been absent from school he has only carried out easier assignments in his home. Yes/No. For example lots of efforts have been made to cure him from his 'mental attacks' but on the other hand he has only one friend that he really can talk to.	Yes/No. Only one friend and gets teased a lot. At the same time he seems to feel that his parents love him and that he can get more friends. Yes/No. Says he knows what to do to make other people happy, but doesn't do it. No. He is often teased and he seems to feel that his father doesn't respect him. Yes. If he does a bad thing he would tell his parents. No. Worried about school and are not sure that things will work out in school. Also worried about his 'mental attacks'.	Yes/No. His parents have not got enough time for him, which means that he only got his one friend to talk to and he only get to meet him every second day. No. Can't stop the teasing and though he wanted to continue school he didn't manage to explain that to his parents. No, when teased he sometimes gets very violent. No. Sometimes cannot handle the teasing and then becomes very violent. Yes/No. He gets help with his illness but not with the teasing problem.

Resilience grade: Low

ACKNOWLEDGEMENTS

We would like to thank the Medical Faculty of the University of Göteborg and MFS-Sida for all support.

We are very grateful to Professor Rifat Nisar Ashraf, Dr. Munir A. Saleemi and all the other colleagues at The Department of Social and Preventive Paediatrics at King Edward Medical College, Lahore, Pakistan, for great help and support. We would also like to thank our interpreter Mr. Zubair Khalid.

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