FEASIBILITY STUDY ON THE USE OF THE TEN QUESTIONS SCREEN BY LADY HEALTH WORKERS TO DETECT DEVELOPMENTAL DISABILITIES IN PAKISTAN

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ABSTRACT

Objective: To assess the feasibility of using the Ten Question Screen (TQS) by Lady Health Workers to detect developmental disability. A secondary aim was to estimate the level of cognitive and learning disability within a well defined area in rural Pakistan.

Design: Cross sectional survey.

Place and duration of study: The study was conducted in Union Council Jatli, Subdistrict Gujar Khan, District Rawalpindi from January to April 2007.

Subjects and Methods: We trained three lady health workers to administer Ten Questions Screen (TQS) within a well defined geographical area.

Results: Out of 1789 children, 612 (34.2%) screened positive on TQS; 24.8 % screened positive on questions on mentally dull, backward or slow; sitting or walking delay; and reported inability to learn to do things like other children. 69.3% of those screened positive, belonged to 2 villages. The children of those 2 villages comprised 33% of total children screened.

Conclusions: We found that primary health workers found TQS easy to use and were willing to incorporate its use in their routine practice. Future studies need to demonstrate the degree of health benefit associated with its use in primary care so that consideration can be given to its incorporation in a national screening programme. High positive screen in two villages may be due to genetic clustering and this requires further investigation.

Key words: Ten questions screen, Lady health workers, Developmental disabilities, Pakistan.

INTRODUCTION

Learning and developmental disorders significantly contribute to disability adjusted life years and have a considerable public health impact[1]. The impact on societies and economies, of such disabilities especially those affecting cognition and learning, is expected to become greater as these countries become more information-oriented and dependent on educated and literate workers. The increased prevalence rates of developmental disabilities in low-income countries are an impediment to future social and economic development[2]. Disability, be it physical, mental or both, has a strong correlation with poverty, a correlation which operates in both directions; poverty leads to disability and disability in turn increases poverty[3]. Low socioeconomic status appears to be the strongest and most consistent predictor of mild mental retardation throughout the world[4].

Pakistan, one such low-income country, has very high reported rates of developmental disability –epidemiological studies indicate rates of 1.9% for serious and 6.5% for mild retardation[5-7]. There is a need for a coherent strategy to address these disabilities as 40% of Pakistan's estimated 160 million population is under the age of 14. Our research group has been engaged in Fogarty International Center sponsored research project to develop a community level intervention for management of intellectual disability in Pakistan. As part of this project, we tested the feasibility of conducting a community level screen, in well defined geographical area us-

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ing lady health care workers (LHW's). LHW's are primary health care workers from within the local community. Their role in Mother and Child programs has increased over the years, and now their duties primarily include providing advice on antenatal care; referral for appropriate delivery care; newborn care, initiation of breast-feeding, initiation of immunization as well as appropriate referral in case of signs of illness. Approximately 96,000 LHWs have been recruited, trained and deployed since 1994, with a target to provide one LHW for every 1000 population throughout the country serving as a backbone for the primary health care programme.

AIMS

The aim of this study was to assess the feasibility of using the Ten Question Screen (TQS) by Lady Health Workers to detect developmental disability. A secondary aim was to estimate the level of cognitive and learning disability within a well defined area in rural Pakistan. The screen was carried out as part of the needs assessment of the larger project to develop a community intervention for children with intellectual disability. It was requested by carers and health care providers who wished to obtain estimates of cognitive disabilities for their local population.

SUBJECTS & METHODS

All children aged 2-9 in one union council with an estimated population of 15000 were screened for disability using the TQS. Union Council is the smallest administrative unit in Pakistan with a distinct geographical boundary. Each Union Council is headed by a Union Nazim and has elected members known as councilors. The screen was carried out by two lady health workers and their supervisor. They were trained in its use following an hour long training session.

TQS is a low-cost, rapid and cross-culturally valid method of identifying disabilities in children and has been tested in epidemiologic surveys involving screening (Durkin et al, 1995) (See appendix). A true positive is defined as a child with a disability who was positive on any one or more of the questions. It has a sensitivity of greater than 80% for serious cognitive, motor and seizure disabilities; Specificity is greater than 85% for any serious disabilities. The ten questions screen is not an assessment tool. Its utility lies in its ability to screen or select a fraction of the population at high risk for serious disability. As a screening tool, it allows scarce diagnostic and other professional resources to be efficiently directed toward those at high risk. Six of the ten questions (questions 1, 4, 7, 8, 9, 10) are designed to detect mental retardation or serious cognitive disability. Questions 1 (delayed milestones) and 9 (impaired or delayed speech) are included among these along with questions on learning and comprehension because children with serious mental retardation typically exhibit these characteristics. Two questions (questions 1, 5), including one of the mental retardation questions (question 1) are intended to detect serious motor disability. In addition, there is one question each to identify serious disabilities related to vision (question 2), hearing (question 3), and seizures (question 6).

Table 1 showing sex distribution, birth order and response to screen questions for the whole population screened

Variable	n	Percentage
Gender (Male/Female)	**904/872**	**50.5/48.7**
Birth order		
1	433	24.2
2	386	21.6
3	299	16.7
4	199	11.1
5	115	6.4
6 or above	115	6.4
Screen questions	Yes/No (n)	Yes/No (%)
Neck delay	280/1509	15.7/84.3
Learning problems	67/1722	3.7/96.3
Mental weakness	170/1619	9./590.5
Sitting walking delay	286/1503	16/84
Talk delay	156/1633	8.7/91.3
Visual difficulties	35/1754	2/98
Weakness	95/1694	5.3/94.7
Fits/unconsciousness	37/1752	2.1/97.9
Hearing problems	44/1745	2.5/97.5

RESULTS

In total 1789 children were screened. The mean age of the whole sample was 4.9 years (SD 2.06).

The characteristics of the whole population sample is outlined in table 1.

24.8 % screened positive on questions on mentally dull, backward or slow; sitting or walking delay; and reported inability to learn to do things like other children (Questions 1, 7 and 10). There were 208 boys and 233 girls with mean age in years of 4.92 (4.65,5.19) and 5.00 (4.73,5.27) respectively. 612 (34.2%) screened positive on TQS; there was considerable variation (from 40.1% – 0.3% of the positive screen) within the union council villages for children who were screened posi-

Table 2 showing birth order in those who screened positive for Questions 1, 7 and 10 of the TQS.

Variable		n	Proportion positive on screens for three questions in terms of birth order	Percentage of positive screen on TQs
Birth order	1	118	118/433=0.27	19.3
	2	90	90/386=0.23	14.7
	3	67	67/299=0.22	10.9
	4	64	64/199=0.34	10.5
	5	30	30/115=0.26	4.9
	6 or above	39	39/115=0.34	6.3

tive on these three items of the TQS, with more than 69.3% of screened positive belonged to two villages. The children of those 2 villages comprised 33% of total children screened.

Birth order of those screened positive on the above questions is outlined in table 2.

DISCUSSION

This estimate indicates that high rate of cognitive disability exist in 2-9 age group in our study area. These findings are consistent with other reports from Pakistan where a cluster sample of 6365 was studied and a cognitive disability rate of 1.9% for serious and 6.5% for mild retardation was found[6].

Currently, in Pakistan, there is no system of routine screening of infants and young children. Screening is necessary in order to enable early detection and appropriate intervention, particularly where there are such high rates of disability. We found that lady health workers found TQS easy to use and were willing to incorporate its use in their routine practice. In another study Tareen et al (2008) report that lady health workers strongly perceive a parent based community intervention to be both useful and feasible in a poor rural area of Pakistan[8]. Therefore, these studies indicate that lady health workers provide an opportunity to develop a system of screening and possibly delivery of a public health intervention to improve outcomes in those with intellectual disabilities in Pakistan. There is an urgent need to develop, test and implement such an intervention, given the high level of intellectual disabilities. The involvement of lady health workers could ensure equitable coverage, given that their services are delivered throughout the country and provide a large proportion of maternal and child healthcare in rural areas.

Our findings need to be interpreted with caution. This is because we used a screening instrument, rather than confirmatory interviews to define those with disabilities. Data was collected cross-sectionally from carers using cross-sectional design by local health workers, and therefore may be vulnerable to information bias. Therefore only tentative conclusions can be drawn from this pilot study, and further work is required in this area.

Our finding that 69.3% of those screened positive belong to 2 villages while the children of those 2 villages comprised 33% of total children screened, warrants further investigation. This may be due to genetic clustering secondary to consanguinity which is common all over Pakistan as it is imbibed in local culture and tradition. Development of local capacity in relation to genetic studies of developmental disability needs to be addressed as a priority. There is a need for further work in the same field site by research groups with expertise in genetics.

The finding of no difference in the level of disability according to the birth order in relation to three questions relating to learning disability, but a reduction in this level within the child population with an increase in their birth order warrants further investigation. There is also a need to further study whether social and environmental influences contribute to different levels of disability in terms of birth order, so that appropriate interventions are developed that complement the existing systems of care.

DECLARATION OF INTEREST

Fogarty International Center, National Institute of Health (USA) (R21 TW07754 to IM, AT, AR) funded the study.

APPENDIX

THE TEN QUESTIONS SCREEN

1 Compared with other children, did the child have any serious delay in sitting, standing, or walking?

2 Compared with other children does the child have difficulty seeing, either in the daytime or at night?

3 Does the child appear to have difficulty hearing?

4 When you tell the child to do something, does he/she seem to understand what you are saying?

5 Does the child have difficulty in walking or moving his/her arms or does he/she have weakness and/or stiffness in the arms or legs?

6 Does the child sometimes have fits, become rigid, or lose consciousness?

7 Does the child learn to do things like other children his/her age?

8 Does the child speak at all (can he/she make himself/herself understood in words; can he/she say any recognizable words)?

9 ***For 3 to 9 year olds ask***:

Is the child's speech in any way different from normal (not clear enough to be understood by people other than his/her immediate family)?

For 2 year olds ask: Can he/she name at least one object (for example, an animal, a toy, a cup, a spoon)?

10 Compared with other children of his/her age, does the child appear in any way mentally backward, dull or slow?

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