PSYCHIATRIC DISORDERS AMONG POOR VICTIMS FOLLOWING A MAJOR DISASTER:

ARMERO, COLOMBIA

Bruno R. Lima, M.D., M.P.H.
Associate Professor
Department of Psychiatry
School of Medicine
Department of Mental Hygiene
School of Hygiene and Public Health
Johns Hopkins University

Shaila Pai, Ph.D.
Instructor
Department of Psychiatry
Johns Hopkins University

Hernan Santacruz, M.D.
Assistant Professor
Department of Psychiatry
University Javeriana
Bogota, Colombia

Julio Lozano, M.D.
Assistant Professor
Department of Psychiatry
University Javeriana
Chief, Division of Mental Health
State of Tolima
Colombia

ABSTRACT

We evaluated 102 adult victims of low socio-economic status living in tent camps 8 months following the Armero disaster in Colombia to ascertain the level of psychiatric morbidity. Ninety one percent of the subjects identified by the screening instrument as being emotionally distressed met DSM-III criteria for a psychiatric disorder. The most frequent diagnoses were post-traumatic stress disorder and major depression. These findings indicate that a simple screening instrument can be reliably used for the detection of significant emotional problems among disaster victims. They also show that these victims are not merely distressed; rather, they present clear and treatable psychiatric disorders which center on anxiety and depression. Interventions for their adequate management need to be designed, implemented and evaluated. In a developing country, however, the high prevalence of mental disorders among disaster victims far exceeds the specialized mental health resources. The general health sector, particularly the primary level of care, must participate actively in the delivery of mental health services to meet this need, particularly for a socio-economically disadvantaged population. The narrow range of psychiatric disorders detected among the disaster victims makes it possible to circumscribe the training of the primary care worker in disaster mental health to these priority conditions.

I.   INTRODUCTION

Primary care has been accepted as the main strategy for attaining the WHO goal of "health for all by the year 2,000" (World Health Organization, 1978), and mental health care has been identified as one of its essential components (Pan American Health Organization, 1980), particularly in developing countries (Baasher et al. 1975; World Health Organization, 1975). In these countries, disasters are relatively common occurrences (United States Agency for International Development, 1986), bringing a variety of health problems to victims, families and communities, not only in their immediate aftermath, but in the medium- and long-term range as well (Bode, 1977; Cohen, 1987; Infantes et al. 1970; Oliver-Smith, 1977). Excluding disasters in the United States, developing nations had 86.4% of all disasters in this century, 78% of all deaths, and 97.5% of all affected individuals. For these poor countries the number of individuals affected by disasters is very high, the ratio of dead to affected being 32.9%, a tenfold difference from developed countries (United States Agency for International Development, 1986). Within countries, individuals in the lower socio-economic strata are usually those most severely affected (Funaro-Curtis, 1982). Therefore, disaster victims who are likely to face the greatest psychosocial difficulties in the aftermath of a catastrophe are those that usually have the least access to health services in general (Gish, 1973), and to mental health services in particular (Shapiro, et al, 1985), both because they live in poor countries and because in these countries they are the poorest.

These observations underscore the need to provide adequate health services to meet the varied and significant biopsychosocial needs of the large number of affected individuals who face difficulties in accessing the mental health specialist. Alternative strategies that do not involve only the mental health sector need to be designed and implemented, but they have not been pursued vigorously enough (Lima, 1986a).

This neglect can be ascribed to various factors. For example, the various competing needs disaster victims have range from the management of individual physical problems to the improvement of environmental conditions (Pan American Health Organization, 1981), giving mental health a relatively low priority in the overall disaster response planning. The low priority can also derive from the assumption that while disaster victims may be understandably distressed, they do not meet the criteria for a formal psychiatric diagnosis, and as such do not require specific therapeutic interventions. It may also be due to the perceived difficulties in training the primary care worker in the detection and management of the victims' emotional problems. To address these issues, the authors have evolved a long-range plan to ascertain the frequency and types of emotional disorders of victims and, on the basis of this empirical knowledge, to train health workers in the identification and management of these problems.

This project took advantage of a fortuitous combination of events. One of us (B.R.L.) had been working with the Colombian Division of Mental Health to develop a Primary Mental Health Care Plan for the country at the time the disaster in Armero occurred (Colombia, Ministerio de Salud, 1986). On November 13, 1985 an eruption melted the snowcap of the volcano Del Ruiz, producing a mudslide that completely destroyed the town of Armero (population = 30,000) with over 24,000 casualties. The disaster and its significant health consequences have been described in detail (Gueri and Perez, 1986). By its very nature, the disaster was likely to produce significant mental disorders among the victims, as has been suggested by earlier research (Quarantelli, 1985). Secondly, many of the mental health workers of the region, who may have been of help, perished in the tragedy[1]. These two factors, taken in combination, transferred the responsibility for meeting the victims' mental health needs to the general health sector, particularly to the primary level of care (Lima, 1986 b). The origin, design and development of the project, which are described in detail elsewhere (Lima et al., 1988), relate closely to its long-term objective of developing primary mental health care services to disaster victims of low socio-economic status.

The prevalence of emotional distress among socio-economically deprived victims was assessed by surveying 200 adult survivors of the Armero disaster relocated into tent camps and shelters. The results revealed a high frequency of emotional distress among them eight months after the tragedy (55%). Certain variables were significantly related to being emotionally distressed: personal background, such as living alone, and certain environmental conditions subsequent to the disaster, such as unemployment (Lima et al., 1987).

The instrument used for the screening of emotional distress among adult victims was the Self-Reporting Questionnaire (SRQ) which identifies individuals with emotional problems (Harding et al., 1980). Similar to other screening instruments, the SRQ indicates that an individual who scores positively is "likely to be a case." The specific nature of the disorder cannot be determined, however, the final criteria for caseness resting on the psychiatric examination performed by a well-trained clinician. The SRQ is a simple instrument that has been extensively used in various developing countries in routine clinical situations (Climent et al. 1980), but to our knowledge it had never been used with disaster victims.

The prevalence of emotional problems yielded by the SRQ in the screening of the Armero victims was significantly higher (Lima et al., 1987) than the prevalence usually seen among individuals in community surveys (Finlay-Jones and Burvill, 1977), or among patients in primary care clinics surveyed with this instrument (Mari and Williams, 1985). The two- to three-fold increase in the level of emotional distress seen among disaster victims seemed to indicate the role of a major stress in producing these conditions. However, the validity of these findings and their clinical meaning can be questioned. The high prevalence of emotional distress identified by the SRQ may indicate that the instrument, while valid under ordinary circumstances, could have artificially inflated the prevalence rate by including as probable cases a large number of emotionally normal victims.

Secondly, while a high frequency of emotional distress indicates that formal psychiatric disorders may indeed be prominent in a post-disaster situation, it does not clarify whether the

problems identified may represent minor psychiatric morbidity (Ingham and Miller, 1982), subclinical states (Busnello et al., 1985) or undifferentiated forms of anxiety and depression, which are usually seen in primary care settings (Shepherd, 1983). This issue is of particular importance in gaining a better understanding of mental problems among disaster victims. Some studies have shown an increase in the number of admissions to psychiatric hospitals in a post-disaster situation (Ahearn, 1984) and have identified specific diagnoses among victims (McFarlane, 1986), but other researchers have seen disaster victims as individuals under extreme stress whose reactions do not meet the criteria for a formal psychiatric diagnosis (Cohen, 1985). The kinds of mental health services needed by disaster victims are different if they are to be seen as individuals in distress or as patients with a psychiatric diagnosis. If they are individuals in distress, the utilization of scarce health resources for their mental health care may not be justifiable, and alternative community resources may need to be mobilized to provide the necessary support. On the other hand, if the victims do present extensive and severe psychiatric problems, meeting these needs will have a higher priority and will require more specific interventions.

The present paper reports the results of our efforts to address these two issues: (i) the severity of the psychiatric morbidity presented by the victims; and (ii) the validity of the instrument for screening emotional problems of disaster victims.

II. METHODS

The report is a part of a two-stage evaluation of the psychiatric status of adult survivors of the Armero disaster: an initial screening for detecting "probable cases" using the SRQ, and a subsequent clinical interview of a sub-sample by a psychiatrist. The clinical interview data are used in this report to identify the specific psychiatric disorders among the victims, and to ascertain the validity of the screening instrument under the special post-disaster circumstances.

The SRQ consists of a 20-item neurotic subscale and a 4-item psychotic subscale. For

each symptom identified the interviewer assigned one point. The definition of "probable case" according to the score on the SRQ was based on the following criteria: a score of 8 or more points in the neurotic subscale or a score of 1 or more points in the psychotic subscale.

The original sample consisted of 200 victims over age 18, drawn from two shelters and two camps located in the disaster area. We recruited all adults from the two shelters and one camp, and a convenience sample of 45 subjects from the second camp. All subjects were given an oral explanation of the nature of the research and signed an informed consent form. No subject refused to participate in the research.

The screening interviews were conducted in the shelters and camps, and were done by mental health professionals local to the disaster area. The professionals involved were two psychologists, a psychiatric nurse, and a psychiatric occupational therapist who received special training in the use of the screening instrument.

Based on their scores in the SRQ, the total sample was divided in two groups: those who scored positively by the criteria given above and those who scored negatively. Twenty three subjects were excluded from this sample. They had no emotional problems identified by the screening instrument, although there were indications that they could suffer either from alcoholism (n=22) or epilepsy (n=1). Their exclusion brought the total number of subjects in the sample to 177. Of these, 90 subjects had a positive SRQ score, and 87 had a negative SRQ score. An attempt was made to conduct a psychiatric interview on all the subjects with a positive SRQ score and on one third of those with a negative SRQ score. Seventy of the positives (78%) and 34 of the negatives (39%) were eventually interviewed by research psychiatrists. It was not possible to select this sub-sample by random allocation due to the fact that many individuals had moved out of the tent/camp areas at the time of the psychiatric interview. Only two of the available subjects refused the interview.

The interviewers (n=9) were faculty of the Department of Psychiatry and senior psychiatric residents of the University Javeriana. They were all experienced clinicians, who had

been working in the disaster area since the time of the tragedy. They were also familiar with issues of disaster mental health and had been given additional training in the use of the research instruments.

The psychiatric interview schedule was developed taking into consideration various issues, such as the specific disaster circumstances, the training of the clinicians, and the need to produce generalizable results. Psychiatrists were most familiar with the format routinely used in their clinical services, and it was decided to utilize these guidelines for conducting the psychiatric interview. This interview schedule collected information on the victims' socio-demographic data, family and personal history, pre-morbid personality, previous psychiatric disorders, past and current medical disorders, health and mental health care received, current emotional problems, and mental status examination. A special section on the disaster experience was added. Upon completion of the interview, the psychiatrists entered their clinical diagnosis.

To ensure standardization of the results and the generalizability of the findings, a symptom checklist[2] was appended to the interview schedule to generate DSM-III diagnoses (American Psychiatric Association, 1984). Prior to the data collection, this form was presented to all the participating clinicians and its proper use was extensively discussed in a workshop conducted by the senior author. The clinicians were asked to check the identified symptoms after their clinical diagnosis had been recorded, without being told which symptoms were needed for a specific diagnosis to be made. The symptoms checked by the psychiatrist were reviewed by an independent rater who was familiar with DSM-III criteria and was blind to the psychiatrist's clinical diagnosis, to produce DSM-III diagnoses for each individual case. A was subject was defined as a "psychiatric case" if he/she had a clinical diagnosis entered by the psychiatrist and if the DSM-III check list diagnosis confirmed it.

Selected background variables were compared for the two groups: victims who were interviewed and those who were not interviewed within each group of SRQ scores. This was done

to ascertain the differences between the two groups and their possible impact on the final psychiatric diagnosis. Victims with a confirmed psychiatric diagnoses ("cases") were compared with the probable cases identified by the SRQ to ascertain the properties of the instrument in correctly identifying victims with psychiatric disorders.

III. RESULTS

The sociodemographic characteristics of the sample (N=177) show a slightly greater proportion of females (52.5%). Two thirds of the subjects were under age 45 and only 9% were over age 65. Slightly over half of the sample had elementary education, but one third had had no formal schooling. About half were married or had a common-law marriage, and one-fifth were single. It is of note that 14.7% were widowed. All subjects were of a mixed racial composition. There were no significant differences between the total and convenience samples in their demographic characteristics, SRQ scores and other relevant variables. The demographic characteristics and the mean SRQ scores for the neurotic and psychotic subscales of the sample of 177 subjects were similar to those of the original sample of 200 victims reported in our earlier article (Lima et al., 1987).

Eighty seven subjects had a negative SRQ score and 90 had a positive score. A significant difference (P< .001) was noted in the mean SRQ score for the neurotic subscale of these two groups: 11.19 ± 3.50 for the SRQ positive group and 3.31 ± 2.07 for the SRQ negative group .

The SRQ positives and negatives groups were compared between interviewed and non-interviewed victims from each of these groups. The variables used for comparison here were those which, in the original sample of 200 subjects, had been significantly associated with a higher risk for experiencing emotional distress as defined by a positive SRQ score (Lima et al., 1987). Among the SRQ positives, no significant differences were found between the interviewed and non-interviewed group in any of the selected variables, which include mean SRQ score for the neurotic and psychotic subscales, age, sex, education, marital status, current occupation, presenting physical problems, feeling that people had been of help, and knowing the date for leaving the temporary camp. Among the SRQ negatives, however, three significant differences between the interviewed and non-

interviewed groups were noted. In the interviewed group, there was a higher proportion of women (67.6%) and unemployed victims (73.5%), and the mean SRQ score of the neurotic subscale was higher (4.03 ± 2.01 versus 2.85 ± 1.98, P=.008).

The diagnostic distribution for both SRQ positives and negatives is given in Table 1. Of the 104 subjects who were interviewed, two had to be excluded from the analyses of diagnoses because of insufficient information. Seventy one subjects of the total sample were diagnosed as "cases" (69.6%), i.e., they received a diagnosis made by the clinician which was confirmed by DSM-III criteria. Of the subjects with a positive SRQ score, 91.2% had a psychiatric diagnosis, whereas among the subjects with a negative SRQ score 73.5% did not receive any diagnosis. The most frequent diagnosis was post-traumatic stress disorder (PTSD) for both the SRQ positives (54.4%) and negatives (17.7%). Major depression was the second most frequent diagnosis among the SRQ positives. There were no cases with psychotic disorders.

There were no significant differences noted between cases (n=71) and non-cases (n=31) in their age, sex, education and marital status. However, there was a significant difference in the mean scores of the SRQ. The mean score of the neurotic subscale for cases (10.6 ± 4.0) was twice as high as this score for the non-cases (5.0 ± 3.7), a difference that was significant (P <001). For the psychotic subscale, a similar pattern was seen. The mean score for cases (.65 ± .90) was fourfold the mean score for non-cases (.16 ± .69), again very significant (P <.01).

According to the criteria established for SRQ positivity and caseness, the sensitivity and specificity of the instrument were 87.3% and 80.6% respectively. The positive predictive value was 91.2% and the overall misclassification rate was 14.7%. Most of the distressed individuals were identified by the neurotic subscale. Only 9 victims who scored below the cut-off point of the neurotic subscale had a positive SRQ score because of one or more points on the psychotic subscale. Four of them received no diagnosis by the clinician. The psychiatric diagnoses of the other five subjects included PTSD (n=1), major depression (n=2), alcohol dependence/abuse (n=1) and atypical bipolar disorder (n-1).

Finally, we looked into individual symptoms of the neurotic and psychotic subscales of the SRQ in relation to caseness. An inverse relationship was seen between frequency of symptoms and predictiveness of caseness. Almost all symptoms of the neurotic subscale predicted caseness. The most commonly reported symptoms were feeling nervous, tense or worried, having headaches and being easily frightened. However, these symptoms were the lowest predictors of caseness among the neurotic symptoms of the SRQ. The strongest predictors of caseness were crying more than usual, having trouble thinking clearly and having a poor digestion. In the psychotic subscale, we find that symptoms were relatively infrequent. The most frequent symptoms – paranoid ideation (n=19) and auditory hallucinations (n=20) – were also the strongest predictors of caseness: 94.7% and 90.0%, respectively.

IV. DISCUSSION

The findings of our investigation address the two questions formulated at the outset: 1) is the clinical presentation of these victims identified as "probable cases" by the instrument severe enough to warrant a psychiatric diagnosis?; and 2) is the SRQ an adequate instrument for screening victims of a disaster for their mental health needs?

The results of this study, however, have to be viewed under the constraints of its methodological aspects, which need clarification and discussion.

1. Given the absence of pre-disaster data or control group, we do know whether the frequency of emotional distress identified among victims differs from the one observed in the general population. However, the screening with the SRQ revealed a 55.5% prevalence rate for emotional problems, which differs from the level of emotional distress of the general non-affected population. The SRQ was used in the WHO Collaborative Study on "Strategies for Extending Mental Health Care" in developing countries which was carried out in seven centers, including Colombia (World Health Organization, 1984). This study produced prevalence rates of emotional problems in

primary health care clinics rather than in communities, but it seems reasonable to assume that emotional disorders will be at least the same, and probably higher, in health facilities when compared to the community sample. The total prevalence rate for emotional problems among the primary care clinic attenders in four developing countries was 13.9%. In the Colombian center, the observed rate was 10.8%. Our findings revealed a community-based prevalence rate which is four times the one found in primary health care clinics. These observations lend support to the assumption that this high prevalence of psychiatric disorders is likely to have been precipitated by the disaster either directly or by the difficult socio-economic situation victims had to face in the post-impact period which, in fact, can be seen as an integral component of the disaster process.

2. Twenty three subjects scored negatively on the psychologic and neurotic subscales of the SRQ, but indicated they abused alcohol (n=22) or suffered from epilepsy (n=1). In our previous work with the SRQ in Brazil (Busnello et al, 1985), we had considered positive individuals with a negative neurotic/psychotic subscale score but with a positive indication for alcohol abuse or epilepsy. Given the scarcity of health manpower in the area and the high level of emotional problems among victims, the psychiatric interviews conducted in our study had both a research and a clinical objective. Subjects identified as psychiatrically disordered were referred for appropriate treatment and follow-up. A decision was therefore made to compromise and not to interview those cases whose identified emotional problems could be managed through the utilization of community resources for alcoholism treatment, or medical resources for epilepsy.

3. The subjects interviewed were not randomly selected from each group of SRQ negatives and positives. This may have led to a disproportionate representation of emotionally disturbed or undisturbed individuals in each of the interviewed groups. However, subsequent comparison of these groups revealed that there were no significant differences among the interviewed and non-interviewed groups of the SRQ positives. The differences observed in the interviewed and non-interviewed groups of the SRQ negatives indicate a higher representation in

the interviewed group of females, unemployed and victims with a higher SRQ score, variables which are associated with a higher psychiatric morbidity (Lima et al, 1987). This would tend to increase the number of false negatives, and as such would work against the validity of the SRQ. However, the SRQ reveals a high validity inspite of this bias.

    4. Our research subjects were drawn from the survivors housed in the shelters and camps of the disaster area, being the victims with least personal and financial resources. They were not representative of the entire affected community. It is possible therefore, that the identified psychiatric disorders would not have been so frequent had the selected sample been representative of victims from all socio-economic strata. However, socio-economically disadvantaged victims are the target population for the delivery of primary mental health care in developing countries (World Health Organization, 1978). The long term objective of our study is also the provision of adequate mental health services through the primary health care sector.

    Given these methodological constraints, our findings are the following:

    1. The SRQ, showed good specificity and sensitivity. There were nine cases that were missed by the instrument, and only six false-positives. These small numbers do not allow for additional analyses to be performed. These results indicate that the SRQ is a simple and reliable instrument for screening disaster victims with emotional distress.

    It is of note that the SRQ does not screen for any specific disorder. It does not contain questions specific for PTSD, nor for any particular condition. This could have reduced its sensitivity with disaster victims whose most frequent diagnosis is PTSD. It could be argued that an instrument that screens specifically for PTSD would be more appropriate with this particular population. However, we wanted to test an instrument that has been used in routine clinical situations rather than an instrument specially designed for disaster victims. The potential clinical advantage of having a screening instrument specific for victims would be hindered by the impracticality of having a "patient instrument" and a "victim instrument". In a developing country in particular, we must have one good screening instrument, to be used with both victims and routine patients, and the SRQ seems to be an appropriate one.

The validity of the SRQ is also supported by the fact that almost all individual symptoms of the neurotic subscale predicted caseness. The symptoms in the neurotic subscale which were the most frequent, but the weakest predictors of caseness, related to anxiety. Those that were less frequent, but the strongest predictors of caseness, related to depression and somatic problems. This indicates that, for adequate detection of cases, the health worker must attend to depressive symptoms that may be relatively uncommon, but which, if present, are likely to indicate a psychiatric disorder.

The clinical meaningfulness of the psychotic subscale in screening for emotional problems among disaster victims needs to be redressed, however. Only 9 additional cases were identified by the psychotic subscale of the screening instrument. This low frequency can be expected as psychotic symptoms and conditions are rare among primary care patients. However, only one subject had the diagnosis of atypical bipolar disorder and four received no diagnoses. Furthermore, only two of the four psychotic questions significantly predicted caseness. These findings indicate that the "psychotic" symptoms identified by the SRQ do not seem to reflect a psychotic condition; rather, they relate to clinical manifestations of the same disorders which in most cases also produced multiple neurotic symptoms.

Therefore, the neurotic subscale of the instrument was much more useful than its psychotic subscale, and it is questionable whether the latter should be utilized in routine screening of victims. Had we used only the neurotic subscale for the screening, there would have been a slight drop in sensitivity (85.7%) and a minor increase in specificity (83.3%), but the positive predictive value (91.5%) and the overall misclassification rate (15.4%) would have remained essentially unchanged.

2. The diagnostic distribution of victims interviewed reveals that, among the group of individuals with a positive SRQ score, 90% met the criteria for a formal psychiatric diagnosis. The most frequent diagnoses were PTSD and major depression, corresponding to 80% of all diagnoses made. All other diagnoses were sporadic (Table 1). In a survey of adult patients attending primary care clinics in developing countries (Harding, et al, 1980), three fourth of the subjects were diagnosed as having anxiety or depressive disorders. This seems to indicate that poverty and chronic

deprivation in routine clinical care, in spite of the higher level of violence seen in poor socio-economic conditions, to do not produce PTSD. The high frequency of PTSD among the survivors we studied underscores the impact of the disasters, which may have been potentiated by the victims' background of poverty. Additional studies with victims of different socio-economic status are needed to clarify this issue. It is of note that generalized anxiety disorder occurred infrequently. This may in part be due to the hierarchy of DSM-III. For major depression, exclusion criteria include schizophrenia, schizophreniform disorder and paranoid disorder; for generalized anxiety, however, exclusion criteria are depressive disorder or schizophrenia. Many victims met the DSM-III criteria for both generalized anxiety disorder and major depression, but the former diagnosis was not made because of the concurrent diagnosis of major depression. This decision was made to produce conservative findings. Additional research is needed to look into disaster psychopathology and to reassess the adequacy of the hierarchical structure of available classification systems.

Victims were not merely emotionally distressed, nor did they have minor psychiatric morbidity only. Rather, their clinical presentation corresponded to well-defined and treatable psychiatric disorders, which required effective therapeutic interventions. It is therefore necessary that adequate attention be paid to the mental health needs of disaster victims for the planning of services and resource allocation. It can be argued that mental health specialists should manage these more severe conditions. However, not only are the specialized mental health resources insufficient to meet the victims' needs in developing countries (Sartorius and Harding, 1983), but the general health worker has been effectively trained in basic mental health tasks in routine clinical situations (Ladrido-Ignacio et al., 1983; Srinivasa Murthy and Wig, 1983). The training of the primary care worker in disaster mental health is facilitated by an additional finding of our research: the prevalence of emotional distress among victims is high, but the range of diagnoses is narrow, centering on affective disorders.

It can also be argued that these affective disorders may not be the most frequent among victims of other disasters, but various recent previous studies have shown that anxiety and depression are the predominant features of disaster psychopathology (Bromet et al. 1982; Madakasira and

O'Brien, 1987; Shore et al., 1986; Wilkinson, 1983). Hence, our results indicate that, given the time pressures and the limited resources in a post-disaster period, the training of the primary care worker in delivering effective mental health services to disaster victims should focus only on the identification and management of these two most frequent and clinically relevant conditions. It should not focus on all the disorders which are commonly encountered in routine clinical practice, such as acute and chronic psychoses, organic mental syndromes, mental retardation, epilepsy, and the chronic complainer (Climent & De Arango, 1983; Giel and Harding, 1976; Lima, 1981; Murthy, 1985).

CONCLUSIONS

This study reveals that victims of a major disaster in a developing country living in emergency shelters present a high frequency of emotional distress which can be identified by a simple screening instrument. A standardized psychiatric examination further reveals that the instrument's sensitivity and specificity are adequate, and that most of the emotionally distressed victims meet DSM-III criteria for a psychiatric diagnosis. However, these disorders are limited to anxiety and depression, with clear implications for the training of the primary care worker in disaster mental health.

The long-term objective of this project is to implement and evaluate adequate strategies for the focused training of the primary care worker local to the disaster area in the detection and management of these most frequent and relevant psychiatric disorders seen among victims, for which this study provides initial guidelines.

FOOTNOTES

1.   Servicio de Salud del Tolima, Seccion de Salud Mental (1986) "Resumen de actividades realizadas. Sub-programa: Atencion post-disastre. Noviembre 13, 1985-- Septiembre 30, 1986."

2.   Helzer JE (1984) DSM-III Criteria Checklist, Stand-Alone Version. Department of Psychiatry, Washington University School of Medicine: St. Louis, Mo.

REFERENCES

Ahearn F (1984) Ingresos en servicios de psiquiatria despues de un desastre natural. *Bol Of Sanit Panamer* 97:325-333.

American Psychiatric Association. (1984) *Diagnostic and Statistical Manual.* 3rd Edition, Washington, D.C: American Psychiatric Association.

Baasher TA, Carstairs GM, Giel, R, et al (1975) *Mental Health Services in Developing Countries.* World Health Organization: Geneva.

Bode B (1977) Disaster, social structure and myth in the Peruvian Andes. *Ann NY Acad Sci* 293:246-274.

Bromet E, Parkinson D, Schulberg H, et al (1982) Mental health of residents near the Three Mile Island reactor: A comparative study of selected groups. *J Prev Psychiat* 1:225-276.

Busnello E, Lima BR, Bertolote M (1985) Psychiatric and psychosocial issues in Vila Sao Jose do Murialdo setting in Brazil. In A Jablensky (Ed), *Mental Disorders, Alcohol and Drug-Related Problems. International Perspectives on their Diagnosis and Classification* (pp. 383-390). International Congress Series 669. Amsterdam: Excerpta Medica.

Climent CE, De Arango MV (1983) *Manual de Psiquiatria para Trabajadores de Atencion Primaria.* Washington D.C.: Organización Panamericana de la Salud.

Climent CE, Diop BSM, Harding TW, et al (1980) Mental health in primary health care. *WHO Chron* 34:231-236.

Cohen RE (1985) Reacciones individuales ante desastres naturales. *Bol Of Sanit Panamer* 98:171-180.

Cohen RE (1987) The Armero tragedy: Lessons for mental health professionals. *Hosp Community Psychiatry* 38:1316-1321.

Colombia Ministerio de Salud (1986) *Plan de Atencion Primaria en Salud Mental.* Bogota, Colombia: Ministerio de Salud.

Finlay-Jones R, Burvill PW (1977) The prevalence of minor psychiatric morbidity in the community. *Psychol Med* 7:475-489.

Funaro-Curtis R (1982) *National Disasters and the Development Process: A Discussion of Issues,* Washington, D.C.: U.S. Agency for International Development.

Giel R Harding TW (1976) Psychiatric priorities in developing countries. *Br J Psychiatry* 128:513-522.

Gish D (1973) resource allocation, Equality of access, and health. *Int J Ment Health* 3:399-412.

Gueri M, Perez LJ (1986) Medical aspects of the "El Ruiz" avalanche disaster, Colombia, *Disasters* 10:150-157

Harding TW, DeArango MV, Baltazar J, et al (1980) Mental disorders in primary health care: a study of their frequency in four developing countries. *Psychol Med* 10:231-241.

Infantes V, Veliz J, Morales I, et al (1970). Psychopathological observations in the earthquake area: Ancash 1970. *Rev Neuropsiquiatr* 33:171-188.

Ladrido-Ignacio L, Climent CE, DeArango, MV, et al (1983) Research screening instruments as tools in training health workers for mental health care. *Trop Geogr Med* 35:1-7.

Lima BR (Ed) (1981) *Manual de Treinamento em Cuidados Primarios de Saude Mental*. Porto Alegre, Brasil: Secretaria de Saude e do Meio Ambiente do Rio Grande do Sul.

Lima BR (1986a) Primary Mental Health Care for Disaster Victims in Developing Countries. *Disasters* 10:202-204.

Lima BR (1986 b) Asesoria en salud mental a raíz del desastre de Armero en Colombia. *Bol of Sanit Panamer* 101:678-683.

Lima BR, Pai S, Santacruz H, et al (1987) Screening for the psychological consequences of a major disaster in a developing country: Armero, Colombia. *Acta Psychiatr Scand* 76:561-567.

Lima BR, Santacruz H, Lozano, J et al (1988) Planning for health/mental health integration in emergencies. In M Lystad (Ed). Mental Health Response to Mass Emergencies: Theory and Practice. New York: Brunner/Mazel, p.383-390.

Madakasira S, O'Brien K (1987) Acute post-traumatic stress disorder in victims of a natural disaster. *J Nerv Ment Dis* 175:286-290.

Mari JJ, Williams P (1985) A comparison of the validity of two psychiatric screening questionnaires (GHQ-12 and SRQ-20) in Brazil, using relative operating characteristics (ROC) analysis. *Psychol*

Med 15, 651-659.

McFarlane AC (1986) Post traumatic morbidity of a disaster. A study of cases presenting for psychiatric treatment. *J Nerv Ment Dis* 174:4-14.

Murthy RS (1985) *Manual of Mental Health for Multipurpose Workers*. Bangalore, India: National Institute of Mental Health and Neurosciences.

Oliver-Smith A (1977) Disaster rehabilitation and social change in Yungay, Peru. *Hum Organ* 36:5-13.

Pan American Health Organization (1980). *Health for All by the Year 2000. Strategies*. Washington, D.C.:Pan American Health
Organization.

Pan American Health Organization (1981) *Emergency Health Management after Natural Disasters*. Scientific Publication No. 407. Washington, D.C.: Pan American Health Organization.

Quarantelli EL (1985) What is a Disaster? The Need for Clarification in Definition and Conceptualization in Research. In B.J. Sowder (ed.), *Disasters and Mental Health. Selected Contemporary Perspectives*. Rockville, Maryland: National Institute of Mental Health.

Sartorius N, Harding TN (1983) The WHO collaborative study on strategies for extending mental health care, I: The genesis of the study. *Am J Psychiatry* 140:1470-1473.

Shapiro S, Skinner Ea, Kramer M et al (1985) measuring need for mental health services in a general population. *Med Care* 23:1033-1043

Shepherd M (1983) Mental disorders and primary care in the U.K. *J Public Health Policy* 4: 83-88.

Shore JH, Tatum EL, Vollmer WM (1986) Psychiatric reactions to disaster: The Mt. St. Helen's experience. *Am J Psychiatry* 143:590-595.

Srinivasa Murthy R, Wig NN (1983) The WHO collaborative study on strategies for extending mental health care, IV: A training approach to enhancing the availability of mental health manpower in a developing country. *Amer J Psychiatry* 140:1486-1490.

United States Agency for International Development, Office of U.S. Foreign Disaster Assistance (1986) *Disaster History. Significant Data on Major Disasters Worldwide, 1900 Present.* US AID: Washington, D.C.

Wilkinson CB (1983) Aftermath of a disaster: The collapse of the Hyatt Regency Hotel staywalks. *Am J Psychiatry* 9:1134-1139.

World Health Organization (1975) Organization of mental health services in developing countries. Sixteenth report of the Expert Committee on Mental Health. *WHO Tech Rep Ser* 564.

World Health Organization (1978) *Primary Health Care.* A Joint Report by the Director-General of the World Health Organization and the Executive-Director of the United Nations Children's Fund. Geneva:World Health Organization.

TABLE 1

DISTRIBUTION OF PSYCHIATRIC DIAGNOSES
OF THE ARMERO DISASTER VICTIMS BY RESULTS
OF THE SRQ*

DIAGNOSIS	TOTAL (N=102)		SRQ + (N=68)**		SRQ -(N=34)	
	N	%	N	%	N	%
NO DIAGNOSIS	31	30.4	6	8.8	25	73.5
ANY DIAGNOSIS	71	69.6	62	91.2	9	26.5
POST-TRAUMATIC STRESS DISORDER	43	42.2	37	54.4	6	1.7
MAJOR DEPRESSION	14	13.7	13	19.1	1	2.9
PHOBIAS	1	1.0	1	1.5	--	--
ALCOHOL DEPENDENCE/ABUSE	3	2.9	3	4.4	--	--
PSYCHOSOCIAL FACTORS COMPLICATING PHYSICAL ILLNESS	3	2.9	3	4.4	--	--
ATYPICAL BIPOLAR DISORDER	1	1.0	1	1.5	--	--
GENERALIZED ANXIETY DISORDER	3	2.9	2	2.9	1	2.9
ADJUSTMENT DISORDER	1	1.0	--	--	1	2.9
SOMATIZATION DISORDER	1	1.0	1	1.5	--	--
DISSOCIATIVE DISORDER	1	1.0	1	1.5	--	--

* Self-Reporting Questionnaire

**Two subjects had to be excluded as diagnostic information was missing.

TABLE 2

PREVALENCE (%) OF CASES AMONG VICTIMS OF THE ARMERO DISASTER (N=102) BY PRESENCE OF INDIVIDUAL NEUROTIC SYMPTOMS OF THE SELF-REPORTING QUESTIONNAIRE

SYMPTOM PRESENT?

MOST FREQUENT SYMPTOMS	YES N	YES %	NO N	NO %	P
DO YOU FEEL NERVOUS, TENSE OR WORRIED?	89	77.5	13	15.4	<.001
DO YOU OFTEN HAVE HEADACHES?	75	64.7	27	55.6	.06
ARE YOU EASILY FRIGHTENED?	68	77.9	34	52.9	.01
STRONGEST PREDICTORS OF CASENESS					
DO YOU CRY MORE THAN USUAL?	32	96.9	68	55.9	<.001
DO YOU HAVE TROUBLE THINKING CLEARLY?	20	95.0	81	63.0	.005
IS YOUR DIGESTION POOR?	25	92.0	77	62.3	.005

Detect8.90.PAP