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## Training primary care workers in disaster mental health: The experience in Ecuador, April 6-11, 1987

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# TRAINING PRIMARY CARE WORKERS IN DISASTER MENTAL HEALTH: THE EXPERIENCE IN ECUADOR

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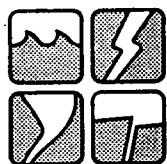
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QUICK RESPONSE RESEARCH REPORT

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TRAINING PRIMARY CARE WORKERS IN  
DISASTER MENTAL HEALTH  
The Experience in Ecuador

Bruno R. Lima

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**Training Primary Care  
Workers in Disaster  
Mental Health**

**The Experience in Ecuador**

**April 6-11, 1987**

**Final Report**

**by**

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## **I. INTRODUCTION**

The proposed research is the first effort of a long-range project to develop the role of the primary care worker (PCW) in providing mental health care to disaster victims. Its specific aims are: (1) to identify the prevalence of psychiatric disorders among victims of different disasters in tent camps and in primary care clinics; (2) to ascertain the PCWs' skills in detecting patients with emotional disorders; (3) to evaluate the efficacy of a focused training course on the PCWs' ability to detect victims with emotional problems; and (4) to probe into the long-term consequences of disasters and alternative management strategies. Associated aims relate to disaster psychopathology and include: (1) comparing emotional symptoms of victims of disasters with different magnitudes; and (2) probing into the relative contributions of individual vulnerabilities, social situation and stressors.

## **II. BACKGROUND AND SIGNIFICANCE**

Disasters have become increasingly important events to mental health professionals, as the full psychological impact of trauma in the short- and long-term range has been recognized (1-5). The mental health effects of various types of disasters have been studied, including floods (6-12), tornadoes (13-15), fires or explosions ((16-20), cyclones (21-24), volcanoes (25-27), earthquakes (28-33), and various kinds of accidents (34-37), including nuclear accidents (38,39). Various efforts have been developed to deliver mental health services to disaster victims, but they have focused on the role of the specialized mental health sector in the immediate post-impact phase (40-42). At the same time, primary care was accepted as the main strategy for attaining WHO's goal of "health for all by the year 2000" (43) reflecting a growing awareness of its role in extending services to the population (44,45). Various studies have shown a high prevalence of emotional disorders among primary care attenders (46-53), leading to efforts for integrating health and mental health (54,55), and promoting appropriate mental health skills, attitudes and knowledge in the PCW (56). The delivery of mental health care to disaster victims, particularly in the medium and long-term range, also requires the mental health/general health integration, but the PCW has not been involved in this process (57).

As a result, these two lines of research and service delivery have not been combined. This is particularly surprising for the following reasons: (i) Disasters affect more severely individuals in the lower socio-economic strata (58) who usually have the highest rates of psychiatric morbidity but least access to health and mental health resources, and to whom primary care has been recognized as the most appropriate strategy (61); (ii) Disaster victims do not see themselves as psychiatric patients (4), but as individuals under stress, more likely to utilize the general health clinics (62) than mental health services (63); (iii) It has been documented that PCWs can be trained to deliver effective mental health care in routine clinical settings (56); and (iv) Mental health interventions in the medium and long-term must conform to the policies of the Ministries of Health for routine health care, which follow WHO's primary health care strategy.

Recent disasters in Latin America offered an opportunity to bridge this gap. We have studied the mental health consequences of two major disasters with the goal of developing new knowledge and improving service delivery. This experience will be applicable to those regions of developed countries where for various reasons - such as scarcity of specialized mental health resources (64) or cultural stigmatization of psychiatric treatment (65) - primary care may be the most appropriate strategy for delivering mental health care. It relates closely to the development and implementation of culturally-appropriate mental health services to the Hispanic population in the U.S., encouraging the adoption of policies to promote the role of the PCW in the delivery of mental health care to victims in Latin American and in the developed world as well. The high concentration of socio-economically disadvantaged Hispanic population in disaster-prone areas (eg. California, Southwestern states and South Florida) and their explosive growth further highlight the applicability of this research to the U.S. (66,67).

The project will also shed light on issues of disaster psychopathology and stress responses in general (68,69). Different methodologies utilized in the various research studies are considered partially responsible for the conflicting findings on disaster psychopathology (70). Our study addresses this issue, as the existing data were collected in a standardized manner on 450 subjects

utilizing the same research instruments and methodology, under the direction of the PI, in the first year after the disasters. To our knowledge, no other data set on Hispanic victims of disasters exist with these characteristics. This standardized information will be utilized to identify similarities in emotional responses to different disasters, which will have tremendous implications for training the PCW in disaster mental health.

### III. PRELIMINARY STUDIES

The PI has had a long-standing interest in primary mental health care (73-77). As a result of this interest, he was invited by the Pan American Health Organization to provide consultation to the Colombia Division of Mental Health for developing a national Primary Mental Health Care Plan (78). The Plan was to be completed in November 1985 and subsequently pilot-tested in the town of Armero (30,000 population). When the town was destroyed by a volcanic eruption on November 13, 1985, with over 22,000 casualties (79), the PI's consultation was postponed. However, the special characteristics of the disaster seemed to provide a unique opportunity for studying primary mental care in disasters (80): most survivors were socio-economically deprived individuals, the target population for primary care; and the regional psychiatric hospital was destroyed, shifting to the general/primary health care sectors the responsibility for delivering mental health care. Taking advantage of this "naturalistic experiment," the PI submitted that a special primary mental health consultation should be provided, which was carried out immediately (81). It led to the development of the Armero and Ecuador projects, which represent the initial steps towards developing primary mental health care in disaster. Figure 1 gives an overview of the project whose rationale and origins have been reported in detail (80). The Armero data address prevalence and detection. The Ecuador project replicates these goals and probes into issues of training and its evaluation. In this report, we will describe the methodology of the project as a whole, focusing on the frequency of emotional disorders of adult patients attending primary cost clinics in Ecuador, which will be compared to our earlier research in Armero. The analyses of the primary care worker's skills in detecting patients with



emotional disorders will be done later. Funds from the Quick Response Grant do not support data analysis, and the analytical work done so far has been funded by the Department of Psychiatry of Johns Hopkins. A grant proposal has been submitted to the National Institute of Mental Health to complete the analyses, but its review is now pending.

#### IV. EXPERIMENTAL DESIGN AND METHODS

This section contains a detailed description of (1) the variables, (2) the research instruments, and (3) the design of the three studies (Armero tents, Armero Clinics, and Ecuador). The existing data on the Colombian and Ecuadorian disasters provide information on the extent of psychiatric problems among victims, and probe into the ability of the PCW in detecting victims with emotional disorders. We plan to analyze this data will on three levels: **descriptive** (prevalence of emotional distress and psychiatric disorders among victims), **analytical** (identification of personal and environment risk factors that may modify response to disaster) and **experimental** (training course of PCWs on disaster mental health). However, only partial analyses will be reported here. (Section V).

##### 1. Variables:

The variables relate to the victims and to the PCWs. For the victims, variables can be grouped into three categories: independent, mediating, and outcome variables. The independent and mediating variables studied related to the overall goals of the project, both in its theoretical and service delivery aspects. The **independent variables** (e.g., personal disposition) relate to those features preceding the disaster: victims sociodemographic characteristics, developmental history, personality traits, previous significant losses, history of medical and psychiatric disorders and treatments. The **mediating variables** (i.e. stressors and social situation) related to the disaster experience (e.g. level of exposure and severity of losses) and to post-disaster conditions (e.g. housing in shelter/camp, level of social support, and life events/stressors). The **outcome variables** relate to the psychosocial consequences of the disaster: levels of emotional distress, psychiatric diagnosis, and utilization of

general health and mental health services. By ascertaining the relative contribution of stressor, personal disposition and social situation to outcome, we will gain a greater understanding of the "pathophysiology" of disasters, with significant implications for developing models of stress-related psychopathology and for implementing management interventions (82).

For the PCW, the independent variables include age, sex, education, years of professional experience, baseline data on their level of knowledge in a disaster mental health, and their skills in correctly detecting patients with emotional disorders. The dependent variables relate to the effects of the training course on the PCWs' knowledge of disaster mental health, and on their detection skills.

## 2. Instruments:

The instruments used are: (a) the Self-Reporting Questionnaire, (b) the Mini-Mental State Examination, (c) the Clinical Interview Schedule, (d) the DSM-III checklist, (e) the Health Staff Review, and (f) Questionnaires on disaster mental health.

Some of the instruments already existed in Spanish, such as the Self Reporting Questionnaire and the Mini-Mental State Examination. A few content modifications in the Mini-Mental State Examination had to be made to adjust it to the local culture. The Clinical Interview Schedule was the one used routinely by the local practitioners, and the Questionnaire developed by the Ecuadorian research team exist only in Spanish. A Spanish version of the DSM-III checklist was prepared by the research team and presented to research clinicians who agreed on the semantic, clinical and cultural appropriateness of the translation.

a. The Self-Reporting Questionnaire (SRQ) is a simple and reliable instrument widely used in developing countries (83-85). It indicates that an individual with a positive score is likely to be a "case", the final criteria for caseness resting on a psychiatric examination.

b. The Mini-Mental Status Examination (MMSE) is a simple and reliable method for detecting cognitive disorders (86-89), which has also been used with Hispanic Populations (90,91). Given the funding limitations, the MMSE was not applied to the clinic subjects.

c. Clinical Interview Schedule was developed taking into consideration the training of the clinicians, the specific disaster circumstances, and the need to produce generalizable results. It gathered information on the victims' socio-demographic background, family and personal history, pre-morbid personality, previous psychiatric disorder, past and current medical disorders, health and mental health care received, disaster experience, current emotional problems, and mental status examination, and clinical diagnosis.

d. The Symptom Checklist (92) was appended to the interview schedule to generate standardized DSM-III diagnoses. The clinicians were asked to check those symptoms they had identified, which were subsequently reviewed by an independent rater familiar with DSM-III criteria.

e. The Health Staff Review (HSR) was completed by the PCW to assess their ability to detect emotional problems. Because of its simplicity and brevity, it has been readily accepted PCWs elsewhere (56). It asks whether the patient suffers from: (i) a physical disorder only; (ii) an emotional disorder only; (iii) both a physical and an emotional disorder; and (iv) neither. If the PCW indicates the patient is suffering from an emotional disorder only or in association with a physical disorder, it is considered that the PCW has detected an emotional problem. This detection by the PCW is compared with the results of the SRQ administered by the research team (probable case) and/or with clinical examination conducted by the research psychiatrist (definite case). Therefore, the ability of the PCW in identifying cases with emotional disorders is not based on his/her self-report; rather, it results from comparing the PCW's detected case with the cases identified by the SRQ and/or with the psychiatrist's exam.

f. A Questionnaire was developed to assess the PCWs' knowledge on disaster mental health and given to the PCWs before the training, after its completion, and 2 months later.

3. Study Design:

Figures 2-4 outline the research design of each study. In this section we will summarize the Armero project and present in greater detail the Ecuador findings.

a. The Armero Project

This project was supported by grants of the Natural Hazards Research and Applications Information Center of the University of Colorado in Boulder and the Johns Hopkins University Institutional Research Grant Projects Committee. Their expedite review process permitted all the data collection to be completed within one year after the disaster. No funds were available for data analysis, however, in either grant.

The Armero design is outlined in Figures 2 and 3. The specific aims of the Armero project were to ascertain the prevalence of emotional disorders in tent camps and primary care clinics eight and eleven months after the disaster, respectively. The sample in tents (Fig. 2) consisted of 200 adults in three camps and a convenience sample a fourth site. No significant differences exist between these samples. For the Clinics (Fig. 3), we screened 100 consecutive adult patients. We attempted at interviewing all subjects who scored positively. Due to pressures for service delivery in a post-disaster situation, we interviewed only a third of those who scored negatively. The PCWs in the clinics documented the detection of patients with emotional problems by completing the HSR. Detailed descriptions of this research methodology have been reported (93).

Only preliminary analyses of the data from the Armero camps have been conducted with limited general funds from the Johns Hopkins Department of Psychiatry. The results indicate a high prevalence of emotional distress among victims in tent camps (94) and among patients in primary care clinics, with a significant under-recognition of emotionally distressed patients by the PCW (95). The Armero project and its findings were reported in a summary paper (96) which received the ACTA award in Buenos Aires, Argentina.

b. The Ecuador Project:

The Ecuador project was supported by funds from the Natural Hazards Research and Applications Information Center of the University of Colorado in Boulder. It studied victims of the major earthquakes that struck the northern provinces of the country in March 1987, and replicated the Armero project in ascertaining the prevalence of emotional disorders and their detection by the PCW, and in utilizing the same instruments and research design for generating comparable data. In addition, it probed into the issues of training by developing and evaluating a course for the PCW.

The study design is outlined in Figure 4. As the Ecuador project had as its main goal ascertaining the effect of a training course on the PCWs in detecting emotional disorders among disaster victims, we were concerned about the issue of a control group. The general practitioners available for the training worked in a small geographic area and had expressed extreme interest in obtaining the necessary knowledge. We felt that having an untrained control group would be neither appropriate nor feasible: it would be difficult to justify withholding training for the duration of the study; and the new information on disaster mental health would probably be shared by all doctors, contaminating the control group. Therefore, we chose a pre/post design. All general practitioners of the region (N=35) received identical training, but only 10 participated in the study. We utilized the same methodology previously described in the study of patients in the Armero clinics for ascertaining the prevalence of emotional distress and the detection by the PCW. The screening was conducted before and after the training.

A total of 150 patients were studied. Before the training, a systematic sample of 50 adult patients coming to 10 selected primary care clinics in the disaster area were screened with the SRQ. The PCWs were given the HSR to be completed for each patient recruited into the study. A 2-day training course was then given to the PCWs utilizing as the basic document the "Manual on Disaster Mental Health for the PCW" (97). The Manual addresses the psychiatric phenomenology of disaster victims interviewing techniques, psychiatric symptoms and frequent psychiatric disorders. For each of these disorders, diagnostic guidelines are given and simple management techniques are provided,

with specified thresholds for referral to the specialized mental health sector. A special section on problems seen in children and adolescents is included.

After the training, 100 consecutive patients not enrolled in the pre-training phase were screened using the SRQ, and the identification skills of the PCWs were evaluated by comparing their response to the HSR with the result of the SRQ. No budget existed for psychiatric interviews. Utilizing their own limited resources, however, the Ecuadorian research team decided to interview those patients who scored positively on the SRQ (N=57). The same instruments used in the Armero project were utilized. Forty-one patients were interviewed by the psychiatrist: a clinical diagnosis was entered and a DSM-III symptom-checklist was completed. The entire study was completed in 2 months.

## V. RESULTS

For the Armero phase of the project, our findings have been reported (94, 96). In this section, we will report the Ecuador findings. Table 1 shows the socio-demographic characteristics of our study sample (N=150). Three fourths of the sample were female, and eighty percent were under age 44. Two thirds were either married or had a common-law relationship, and had education up to 6 years of school. All subjects were of mixed racial composition.

The prevalence of emotional distress as defined by the SRQ was 40%. The mean score for the neurotic subscale of the SRQ for those with a positive result ( $9.73 \pm 3.91$ ) was two and a half the mean score for those subjects with a negative score ( $3.76 \pm 1.93$ ), a difference that is very significant ( $P < .0001$ ).

Individual symptoms of the SRQ were investigated to see whether they could predict emotional distress. Table 2 shows that all symptoms of the SRQ predicted emotional distress with a high level of statistical significance. The most frequent symptoms were "being easily frightened" (Question 4, n=105), "feeling nervous, tense or worried" (Question 6, n=101) and "feeling easily tired" or "sleeping badly" (Questions 3 and 20, n=65). These symptoms, however, were among the weakest



predictors of emotional distress: only about half of the patients with these symptoms were identified by the instrument as emotionally distressed. The strongest predictors of emotional distress were among the most infrequent symptoms: "having difficulty enjoying daily activities" (Question 11, n=28), "feeling like a worthless person" (Question 16, n=21), and "feeling unable to play a useful part in life" (Question 14, n=22). When a patient presented these infrequent symptoms, however, about eight out of ten times he/she would be identified by the instrument as being emotionally distressed.

Table 3 lists various variables associated with emotional distress. Of the socio-demographic variables studied only marital status was predictive of emotional distress: patients who were either single, separated or widowed were significantly more likely to be emotionally distressed than if they were married. The self-perception of poor physical or emotional status was also significantly associated with emotional distress. When the physical symptoms presented by the patients were studied, only the ill-defined conditions were significantly associated with a positive SRQ score. These conditions included poorly defined aches and pains, fatigue, and non-specific gastrointestinal complaints. No association was noted between SRQ scores and age, sex, education, occupation, loss or change of job, reason for clinic visit, various aspects of the disasters injuries, life events between disaster and screening, level of social support, and having plans for the future.

## VI. DISCUSSION

The findings described in this report indicate a high frequency of emotional distress among patients attending primary care clinics in the area affected by the earthquakes in Ecuador. The prevalence of emotional disorders among patients attending primary care clinics in Ecuador was almost three times higher than the prevalence seen among primary care attenders in routine clinical situations utilizing the same instrument (28). We did not obtain data on a control group. The entire population over a very extensive area had been affected by the earthquakes. A control group would have to be recruited from elsewhere, which was impractical, and in a post-disaster situation, actually impossible. However, the large difference in the prevalence rates in a post-disaster situation and in routine clinical settings supports the causal nature of the association between the disaster and the

identified level of emotional problems.

Certain variables relate to the presence of emotional distress among victims. Victims who are who are single, separated or widowed are more likely to be emotionally distressed. A reported good physical health is strongly associated with stable emotional state. It is of course difficult to establish the direction of this association: physical problems may have led to emotional distress, or emotional distress may have been perceived and translated as physical problems. The end result, however, is that the presence of actual physical problems or the perception of poor physical health seem to be associated with emotional distress. This is particularly so when patients complain of ill-defined physical symptoms. These patients were significantly more likely to be emotionally distressed than patients who presented complaints that had a close relationship with well-defined physical disorders. This observation has been made in various routine situations (98); our Armero data on victims in tent camps showed the same pattern (93).

The findings are also consistent with the earlier data produced by the Armero investigation. In interpreting the Ecuador data, it is important to note the various similarities with the patients surveyed in the Armero clinics. Compared to the Armero sample, the Ecuador subjects include a greater proportion of women; no other sociodemographic variables are significantly different.

When the prevalence of emotional distress among the Ecuador victims is compared with the rates for the victims of Armero, an important relationship is noted. In Armero, the highest prevalence (55%) was found among victims of tent camps, who were directly and severely affected by the disaster, having been rendered homeless (94); an intermediate rate (45%) was found in a sample of patients attending primary care clinics of the disaster area. Half of this sample was comprised of subjects from the neighboring towns who had not been directly affected by the mudslide, but whose lives had been significantly changed by the tragedy and by the continuing threat of new eruptions (95). The lowest rate (40%) was found in Ecuador, where there were very few casualties and the property damage was significantly less severe. These rates suggest that the proportion of victims with emotional distress relates directly to the magnitude of the disaster. The

mean scores for the neurotic subscale score, however, show that the severity of symptoms for these three groups of subjects with a positive SRQ score was similar: in Armero, for the victims in camps it was of  $9.78 \pm 4.36$ , and for the patients in the clinics it was of  $8.87 \pm 3.8$ ; in Ecuador, it was of  $9.73 \pm 3.77$ . For the victims with a negative SRQ score, the mean scores for the neurotic subscales were  $3.39 \pm 2.14$ ,  $4.16 \pm 2.04$ , and  $3.78 \pm 1.93$ , respectively. These results indicate that once a victim becomes distressed, the level of symptomatology is similar irrespective of the magnitude of the disaster; but those who do not become emotionally distressed present a remarkable paucity of symptoms. This suggests a dose-response model for the prevalence of emotional distress, and a threshold phenomenon for symptom-severity: the proportion of emotionally distressed victims is higher in disasters of greater magnitude, but the number of symptoms among the distressed and the relative absence of emotional problems among the non-distressed are similar irrespective of the disaster.

When the frequency of symptoms and their capacity to predict emotional distress as defined by the SRQ are analyzed among the Ecuador subjects, an inverse relationship emerges: commonly reported symptoms are weak predictors, whereas less frequently reported symptoms are strong predictors. A similar pattern was noted among victims of the Armero disaster. In the Ecuador and Armero samples, the two most common symptoms were "feeling nervous, tense or worried," and "being easily frightened." "Feeling easily tired" was the third most common symptom in Ecuador and the fourth in the Colombian sample. These symptoms have the lowest rank order in predicting emotional distress. When the strongest predictors of emotional stress are examined, we see that "feeling unable to play a useful part in life" and "feeling like a worthless person" are ranked amongst the three strongest predictors in both sites, although their rank orders in frequency are the lowest.

It is interesting to note that the most frequent symptoms detected by the SRQ among the victims both in Armero and Ecuador refer mostly to anxiety, whereas the strongest predictors refer mostly to depression and social dysfunction. The clinical examination of a subsample of the Armero victims in tent camps showed that the most frequent psychiatric diagnoses among those with a

positive SRQ score were post-traumatic stress disorder and major depression (93) which suggests that anxiety and depression may indeed be the most frequent and relevant symptoms among victims of various kinds of disasters.

Finally, the symptom-profiles of the neurotic subscale for these sets of data indicate a remarkable similarity among the subjects with a positive SRQ score (Figure 5): the curves show a remarkable overlapping scores for victims in tent camps in Armero, and for patients in primary care clinics in Armero and Ecuador. These data further emphasize the similarity in emotional responsiveness of victims to different disasters.

The utilization of the PCW in delivering mental health care to disaster victims will benefit from these findings which represent empirical guidelines for designing a focussed mental health training. These findings, however surprising, are very promising. Disasters with different impacts could elicit different patterns of emotional response. The consistency of symptoms in Armero and Ecuador seems to indicate that human beings under severe stress, once a given threshold is reached, may present relatively similar emotional responses. This implies that in disasters of lessened magnitude, we may find fewer victims with emotional distress, but the distressed individuals will be as symptomatic as victims of a major catastrophe, and will require the same level of care. The PCW needs to be properly prepared to identify and manage these emotional problems.

Under-recognition of emotional distress by the PCW however, has been widely documented in various health settings, both in developed (99,100) and in developing countries (52). Similar observations were made by us among disaster victims attending the primary care clinics in Armero, where the PCW failed to diagnose 75% of those patients who had been identified as emotionally distressed by the SRQ (95). Although the training of the PCW in basic mental health actions has been successfully implemented in various routine situations (56), additional knowledge on disaster mental health needs to be gained for the adequate training of the PCW. Given the magnitude of the problem, the scarcity of resources and the pressured time frame, the training of the PCW in disaster mental health must be carefully designed to meet the victims' needs. It cannot be too narrow, as the

PCW will not be able to detect and manage certain conditions not emphasized in routine training, as the post-traumatic stress disorder. Nor can it be too broad, as scarce resources would be wasted in training the PCW for the management of conditions unlikely to be present among disaster victims, such as acute psychotic states. These findings also underscore the need for the PCW to be able to identify and manage relatively severe levels of emotional distress in victims of disasters, regardless of their magnitude. The frequency of distressed victims may vary according to the impact of the disaster, but once a victim becomes emotionally distressed, the types and severity of symptoms can be expected to be the same.

This training program should also draw the PCWs' attention to those factors likely to be associated with significant emotional distress among disaster victims, such as certain personal characteristics (e.g., not being married), report of poor physical health or of certain symptoms (e.g., nonspecific physical complaints), or specific emotional symptoms (e.g., having difficulties in enjoying daily activities).

## VII. CONCLUSIONS

This study produced important data for understanding the relationship between disaster and psychological problems. It showed that the earthquakes in Ecuador produced a high level of emotional distress among patients in primary care clinics. It also permitted the identification of symptoms and variables which seem to predict emotional problems.

This report also takes advantage of the fact that the same research strategy and instruments were utilized by the authors in Armero and Ecuador, which permits the comparison of these data sets. Its major comparative findings are: (i) the frequency of emotional distress among disaster victims is proportional to the magnitude of the catastrophic events; (ii) the level and pattern of symptoms among the distressed are similar for victims of different disasters; and (iii) the most common and the strongest predictors of emotional distress are essentially the same for all the subjects studied.

The initial results from Armero had provided guidelines for producing a Manual (97) which has been piloted in the mental health training of rural doctors and nurses local to the disaster areas (101). The findings from this present study in Ecuador replicate many of the original observations made with the Armero victims, emphasize the similarity of emotional problems among victims on disasters with different magnitudes, and support our efforts to develop and implement a manual of disaster mental health for the training of the PCW with applicability in Latin America.



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**TABLE 1**

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**SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE VICTIMS  
OF THE ECUADOR DISASTER (N=150)**

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		<u>N</u>	<u>%</u>
<u>SEX</u>	Male	28	18.7
	Female	122	81.3
<u>AGE (YEARS)</u>	<18	9	6.0
	18-44	113	75.3
	45-64	14	9.3
	65+	14	9.3
<u>MARITAL STATUS</u>	Single	33	22.1
	Married/Common Law	102	68.5
	Separated	3	2.0
	Widowed	11	7.4
<u>EDUCATION (YEARS)</u>	None	12	8.4
	1-6	83	58.0
	7-12	42	29.4
	13+	6	4.2

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TABLE 2

PREVALENCE (%) OF EMOTIONAL DISTRESS DEFINED BY THE SRQ<sup>a</sup>

## BY NEUROTIC SYMPTOMS INCLUDED IN THE SRQ

## AMONG VICTIMS OF THE ECUADOR DISASTER (N=150)

NEUROTIC SYMPTOMS	SYMPTOM PRESENT?				
	YES		NO		P
	N	% WITH EMOTIONAL DISTRESS	N	% WITH EMOTIONAL DISTRESS	
1. DO YOU OFTEN HAVE HEADACHES?	54	69	96	24	<.0001
2. IS YOUR APPETITE POOR?	51	67	98	27	<.0001
3. DO YOU SLEEP BADLY?	65	60	85	25	<.0001
4. ARE YOU EASILY FRIGHTENED?	105	47	44	25	<.02
5. DO YOUR HANDS SHAKE?	59	56	91	30	<.002
6. DO YOU FEEL NERVOUS, TENSE OR WORRIED?	101	53	48	15	<.0001
7. IS YOUR DIGESTION POOR?	26	62	124	36	<.02
8. DO YOU HAVE TROUBLE THINKING CLEARLY?	49	70	101	26	<.0001
9. DO YOU FEEL UNHAPPY?	37	70	112	30	<.0001
10. DO YOU CRY MORE THAN USUAL?	47	70	103	26	<.0001
11. DO YOU FIND IT DIFFICULT TO ENJOY YOUR DAILY ACTIVITIES?	28	93	121	27	<.0001
12. DO YOU FIND IT DIFFICULT TO MAKE DECISIONS?	46	65	104	29	<.0001
13. IS YOUR DAILY WORK SUFFERING?	25	68	124	34	<.002



TABLE 2 (continued)

	SYMPTOM PRESENT?				
	YES		NO		
		% WITH EMOTIONAL DISTRESS		% WITH EMOTIONAL DISTRESS	
<u>NEUROTIC SYMPTOMS</u>	<u>N</u>		<u>N</u>		<u>P</u>
14. ARE YOU UNABLE TO PLAY A USEFUL PART IN LIFE?	22	87	126	32	<.0001
15. HAVE YOU LOST INTEREST IN THINGS?	25	84	125	31	<.0001
16. DO YOU FEEL THAT YOU ARE A WORTHLESS PERSON?	21	91	128	31	<.0001
17. HAS THE THOUGHT OF ENDING YOUR LIFE BEEN ON YOUR MIND?	17	71	133	36	<.01
18. DO YOU FEEL TIRED ALL THE TIME?	35	66	113	32	<.001
19. DO YOU HAVE UNCOMFORTABLE FEELINGS IN YOUR STOMACH?	44	59	105	31	<.002
20. ARE YOU EASILY TIRED?	65	57	84	26	<.0001

\*SELF-REPORTING QUESTIONNAIRE

TABLE 3

SELECTED VARIABLES ASSOCIATED WITH EMOTIONAL DISTRESS AS DEFINED BY THE SRQ<sup>\*</sup>  
 AMONG VICTIMS OF THE ECUADOR DISASTER (N = 150)

	<u>SELF-REPORTING QUESTIONNAIRE</u>		
	<u>Negative</u>	<u>Positive</u>	<u>P</u>
<u>PERSONAL VARIABLES</u>	(N=93)	(N=57)	
MARITAL STATUS			
SINGLE	42.4	57.6	
MARRIED/Common LAW	68.6	31.4	<.03
SEPARATED	33.3	66.7	
WIDOW	36.4	63.6	
<u>SELF-PERCEIVED HEALTH</u>			
PHYSICAL STATUS			
EXCELLENT/GOOD	75.7	24.3	<.001
REGULAR/BAD	46.3	53.8	
EMOTIONAL STATUS			
EXCELLENT/GOOD	71.3	28.8	<.03
REGULAR/BAD	47.1	52.9	
<u>ILL-DEFINED PHYSICAL COMPLAINTS</u>			
YES	45.8	54.2	<.005
NO	69.2	30.8	

\*SRQ = SELF-REPORTING QUESTIONNAIRE

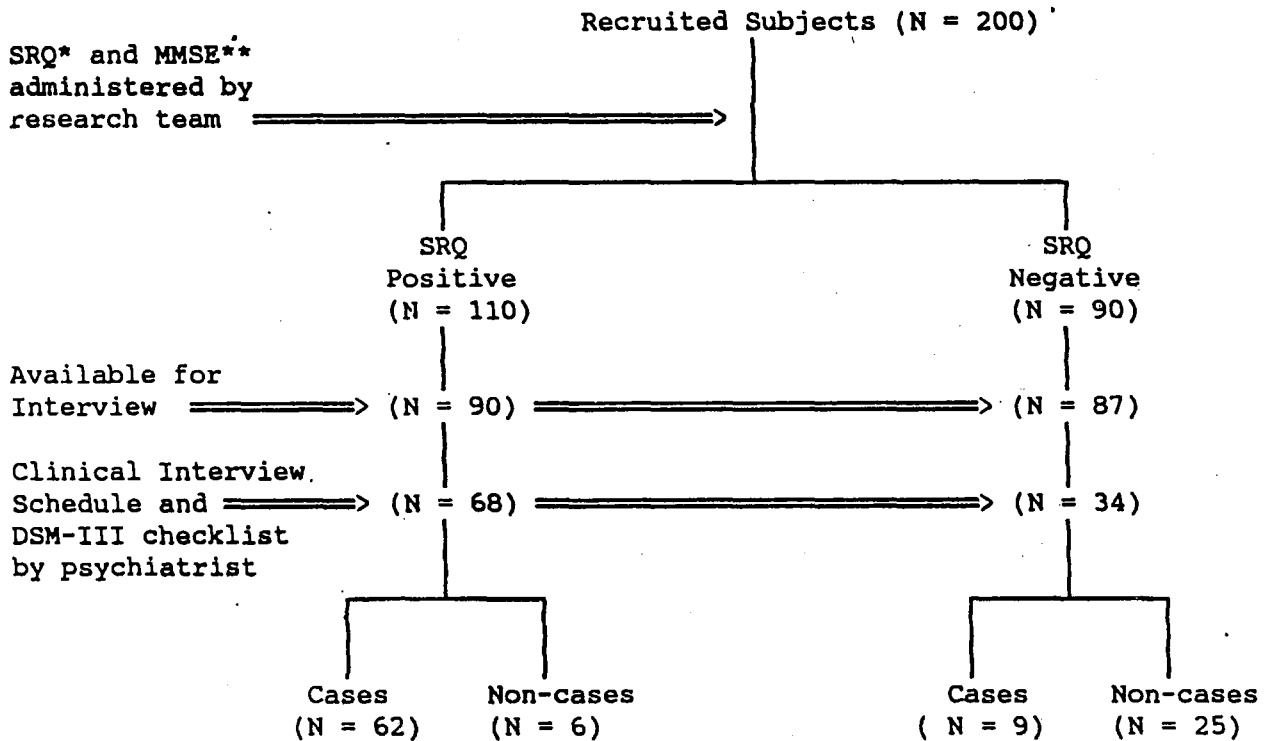
**FIGURE 1: SUMMARY OF AURELIO AND ECUADOR PROJECTS**

	EXISTING DATA			
	ARMERO		ECUADOR	NEW DATA
	Tents	Clinics	Clinics	ARMERO Community
<b>Main Purpose:</b>	- Prevalence in community ( <u>need</u> )	- Prevalence in health care settings ( <u>demand</u> ) - PCW's <u>detection</u>	- Prevalence in health settings ( <u>demand</u> ) - PCWs' <u>detection</u> - PCWs' <u>response to training</u>	- <u>Long-term consequences</u> - probe into <u>management approaches</u>
<b>Study Design:</b>	Descriptive/Analytical See Figure 2	Descriptive/Analytical See Figure 3	Descriptive/Analytical/ Experimental See Figures 4	Descriptive/Analytical See Figure 5
<b>Subjects:</b>	Homeless victims directly affected	Victims and non-victims from affected communities	Victims and non-victims from affected communities	Former tent victims, now in permanent housing
<b>Number</b>				
Screened:	200	100	150	150
Interviewed:	102	50	41	150
<b>Instruments:</b>	- SRQ <sup>1</sup> - Clinical Interview - DSM-III Checklist - MMSE <sup>2</sup>	- SRQ - Clinical Interview - DSM-III Checklist - HSR <sup>4</sup>	- SRQ - Clinical Interview - DSM-III Checklist - HSR	- SRQ - Clinical Interview - DSM-III Checklist - MMSE
<b>Main Dependent Variables:</b>	- Emotional distress - Psychiatric diagnoses - Cognitive impairment	- Emotional distress - Psychiatric diagnoses - Detection by PCW	- Emotional distress - Psychiatric diagnoses - Post-training changes in detection of cases by PCW as a result of training	- Emotional distress - Psychiatric diagnoses - Cognitive impairment
<b>Intervention:</b>	None	None	Training of PCWs	None
<b>Preliminary Main Findings:</b>	- High prevalence of emotional distress - Most frequent diagnosis: post-traumatic stress disorder	- High prevalence of emotional distress - Low detection of patients with emotional distress	- High prevalence of emotional distress	No data collected
<b>Additional Analyses to be Done:</b>	<div style="display: flex; justify-content: space-between;"> <div style="width: 22%;"> <p>a) for each individual study:</p> <ul style="list-style-type: none"> <li>- Relationship between SRQ and diagnosis</li> <li>- Predictors of specific diagnoses</li> <li>- Subclinical conditions</li> <li>- hierarchy of diagnoses</li> <li>- utilization of health services</li> </ul> </div> <div style="width: 22%;"> <ul style="list-style-type: none"> <li>- Frequency of specific diagnoses</li> <li>- Replicate analyses with tent victims in relation to other diagnostic issues and utilization of services</li> <li>- Analyze detection by the PCWs in comparison to SRQ diagnoses</li> <li>- Probe into issues of exposure to disaster</li> </ul> </div> <div style="width: 22%;"> <p>-(Same as in Armero Clinics) PLUS:</p> <ul style="list-style-type: none"> <li>- Changes in detection of patients with emotional distress by PCWs secondary to intervention</li> </ul> </div> <div style="width: 22%;"> <p>-(Same as in Armero Tents) PLUS:</p> <ul style="list-style-type: none"> <li>- Prevalence three years after disaster</li> <li>- Protective factors</li> <li>- Risk factors</li> <li>- Significant life-events</li> <li>- Effect and importance of helping services</li> </ul> </div> </div>			
<b>b) comparing four studies:</b>	<ul style="list-style-type: none"> <li>- Utilize data collected with the same instruments and similar research design</li> <li>- To compare emotional symptoms of victims of disasters and to ascertain the relative contribution of stressors, personal disposition and social situation to observed outcome</li> </ul>			

1 PCW = Primary Care Worker; 2 SRQ = Self Reporting Questionnaire; 3 MMSE = Mini-Mental State Examination;

4 HSR = Health Staff Review

**FIGURE 2**  
**EXISTING DATA**  
**ARMERO**  
**TENT CAMPS**



\* SRQ = Self Reporting Questionnaire  
\*\* MMSE = Mini-Mental State Examination

**PRELIMINARY MAIN FINDINGS:**

- High prevalence of emotional distress
- Most frequent DSM-III diagnoses:
  - post-traumatic stress disorder
  - major depression

**ADDITIONAL ANALYSES TO BE DONE:**

- Relationship between SRQ and diagnosis
- Predictors of specific diagnoses
- Phenomenology of subclinical conditions
- Hierarchy of diagnoses
- Utilization of health and mental health services

FIGURE 3

EXISTING DATA

ARMERO

PRIMARY CARE CLINICS

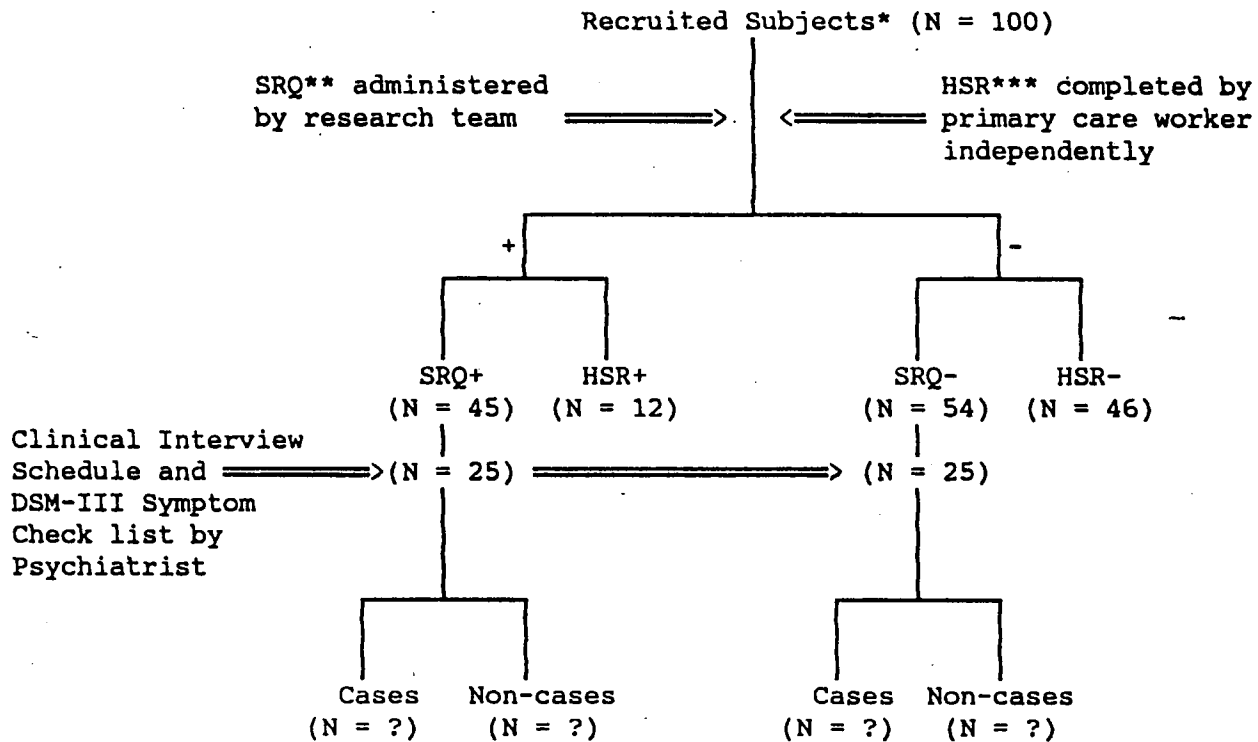


FIGURE 4

EXISTING DATA

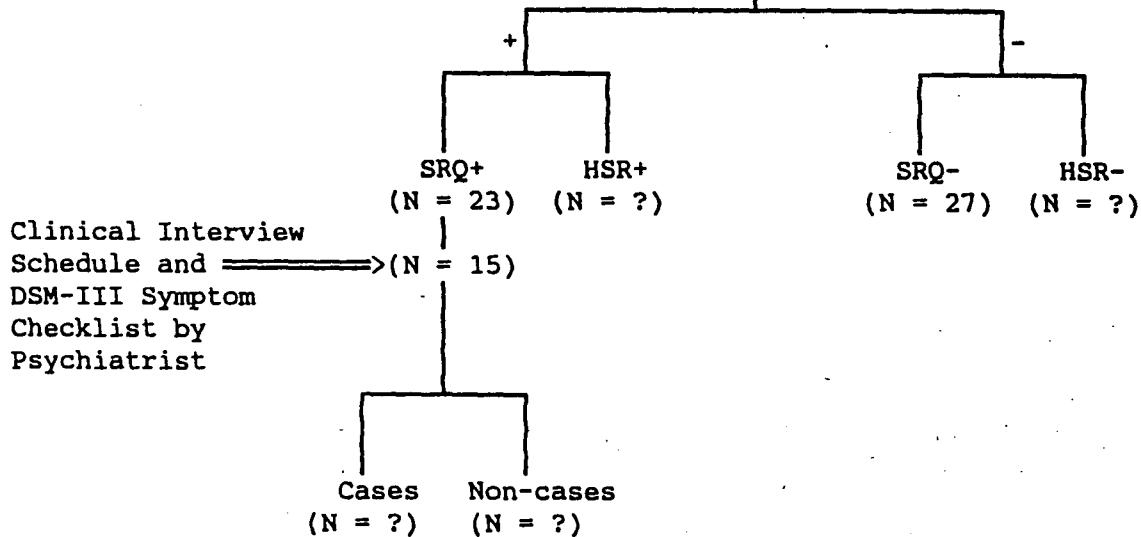
ECUADOR

PRE-TRAINING

Recruited Subjects (N = 50)

SRQ\* administered  
by research team

HSR\*\* completed by  
primary care worker  
independently

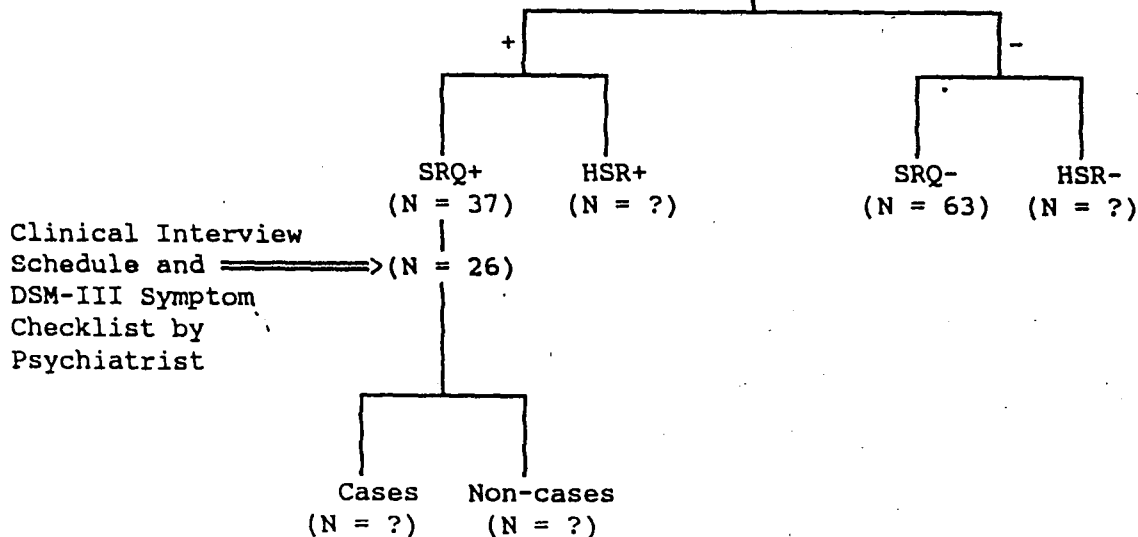


POST-TRAINING

Recruited Subjects (N = 100)

SRQ\* administered  
by research team

HSR\*\* completed by  
primary care worker  
independently



\* SRQ = Self Reporting Questionnaire; \*\* HSR = Health Staff Review

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**FIGURE 4 (continued)**

**EXISTING DATA**

**ECUADOR**

**PRE-TRAINING AND POST-TRAINING**

**PRELIMINARY MAIN FINDINGS:**

**ADDITIONAL ANALYSES TO BE DONE:**

- 
- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>▪ High prevalence of emotional distress among emotional care workers</li></ul> | <ul style="list-style-type: none"><li>▪ Frequency of specific DSM-III diagnoses</li><li>▪ Relationship between SRQ and DSM-III diagnoses</li><li>▪ Predictors of specific diagnoses by SRQ results</li><li>▪ Phenomenology of subclinical conditions</li><li>▪ Hierarchy of diagnoses</li><li>▪ Utilization of health and mental health services</li><li>▪ Detection of patients with emotional problems by primary care worker in comparison to psychiatric diagnoses</li><li>▪ Probe into issues of disaster exposure as sample includes subjects who have been affected by the disaster in different ways</li><li>▪ Changes in detection of emotional distress by the primary care worker secondary to training courses completion of pre-training and post-training detection rates</li></ul> |
|--|---|

PERCENT

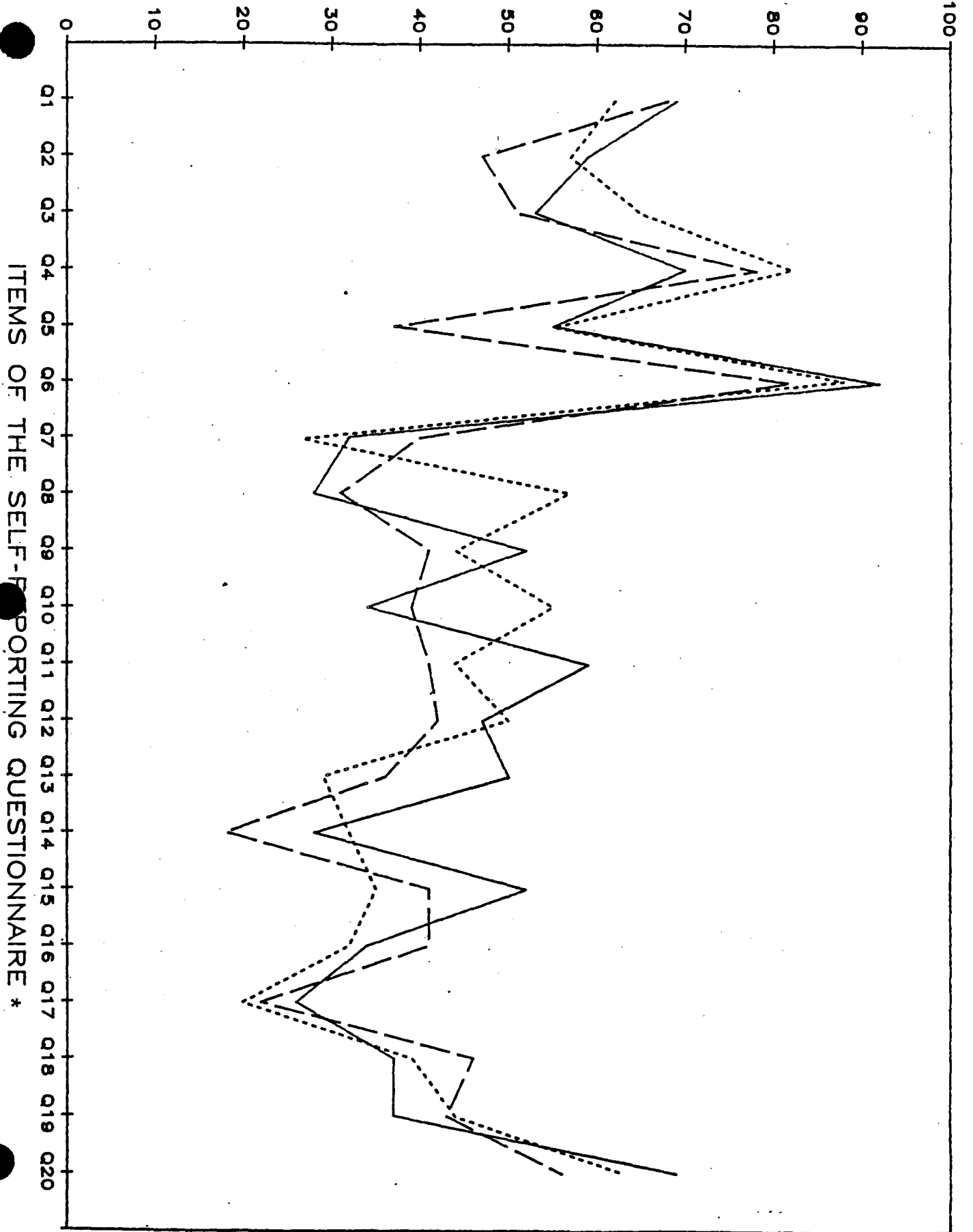


FIGURE 5



**Figure 5.** Symptom profile of victims with emotional distress as defined by the Self-Reporting Questionnaire in tent camps in Armero (N=111) and in primary care clinics in Armero (N=45) and Ecuador (N=60).

\_\_\_\_\_ Armero tents  
- - - - - Armero Clinics  
- - - - - Ecuador

\*See appendix for individual symptoms of the Self-Reporting Questionnaire.

## APPENDIX

### Items of the Self-Reporting Questionnaire

1. Do you often have headaches?
2. Is your appetite poor?
3. Do you sleep badly?
4. Are you easily frightened?
5. Do your hands shake?
6. Do you feel nervous, tense, or worried?
7. Is your digestion poor?
8. Do you have trouble thinking clearly?
9. Do you feel unhappy?
10. Do you cry more than usual?
11. Do you find it difficult to enjoy your daily activities?
12. Do you find it difficult to make decisions?
13. Is your daily work suffering?
14. Are you unable to play a useful part in life?
15. Have you lost interest in things?
16. Do you feel that you are a worthless person?
17. Has the thought of ending your life been in your mind?
18. Do you feel tired all the time?
19. Do you have uncomfortable feelings in your stomach?
20. Are you easily tired?