

SECONDARY DEFORMITY IN LEPROSY: A SOCIO-ECONOMIC PERSPECTIVE

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ABSTRACT

*This study describes the demographic and socio-economic status of patients admitted to Anandaban Leprosy Hospital, Nepal, who had deformities, using a case study and descriptive approach. During November and December 1997, 100 inpatients (70 male and 30 female) who were available during that period of time were taken for this study. Non-Nepali citizens were excluded. Deformity was categorised into 2 groups. Those that were a result of direct nerve damage by invasion of *M. leprae* were categorised as primary deformity (e.g., anaesthesia, claw hand, foot drop etc.). Those that were a result of neglect of primary deformities, were categorised as secondary deformity (e.g., ulcers, loss of digits etc.) The EPI-INFO package was used to analyse data. The proportion of secondary deformity was found to be higher in an urban resident, female, lower caste, illiterate, no income group and manual workers in comparison to reciprocal groups. However statistical differences were not significant for any of the mentioned variables. A significant difference was found in comparing the age groups of those below and above 30 years of age. Only 29% of respondents below 30 years of age had secondary deformity while percentage was higher (70%) for those above 30 years of age. Further qualitative research is needed to explore risk factors in the development of deformities in patients with leprosy related neuropathy.*

INTRODUCTION

Leprosy produces disability and deformity through nerve damage (1). The fear and strong stigma associated with leprosy are mostly due to the deformities and mutilations generally regarded as essential features of the disease (2). Patients who are not treated at an early stage of the disease develop anaesthesia and/or deformity of the eye, hands and feet. As a single disease entity, leprosy is one of the foremost causes of deformities and crippling (3).

Primary deformities (e.g. anaesthesia, lagophthalmos, claw hands etc.) are directly caused by the tissue reaction to infection with *M. leprae*. Secondary deformities (e.g. ulcer, loss of toes and fingers etc.) occur as a result of damage to the anaesthetic parts of the body. Several factors are associated with secondary deformities in leprosy. Age, sex, occupation, education and socio-economic status play a significant role in the development of such kinds of deformities (3).

The main aim of this study was to see if there is any relationship between secondary deformities and demographic plus socio-economic status. This study was conducted in the Anandaban Leprosy Hospital, which is situated at Tika Bhairab, Lele VDC of Lalitpur district in the central region of Nepal. Nepal is a country with different ecological conditions and diversified cultures. Thus the patients admitted in Anandaban Leprosy Hospital are not wholly representative of Nepal, although leprosy patients from different parts of Nepal are admitted in this hospital according to medical need irrespective of demographic and socio-economic status. So it was assumed that the information collected from this centre could be used as a representation of the Nepalese situation.

MATERIALS AND METHOD

During November and December 1996, 100 in-patients who were available during that period were considered for this study. Data were obtained directly from the primary sources. This study followed a case study approach which is descriptive in nature. While collecting information, non-Nepali citizens were excluded. The male: female ratio was taken into consideration because among the leprosy patients in Nepal this ratio is 2:1. Thus among the 100 persons in the sample, there were 70 males and 30 females. Data were collected through a pre-tested structured and semi-structured interview schedule. To avoid a biased response (that they might expect to receive some benefits by taking part in the study), the subjects were informed that the study was for academic purposes and that the information gathered would be confidential. The interviews were conducted within the hospital campus according to the convenience of patients. The nature of the deformity was categorised into 2 groups. Deformities which are the result of direct nerve damage by invasion of *M. leprae* were considered as primary deformity (e.g. anaesthesia, claw hand/toes, wrist/foot drop etc.). Those that were the result of neglecting primary deformities were considered as secondary deformities (e.g.

ulcers, loss of digits, contracture of skin, stiffness of joints etc.). The EPI - INFO computer software package was used to analyse the data.

RESULTS

Attempting to find out the effect of demographic and socio-economic factors on occurrence of primary deformities is not appropriate because these are directly caused by the tissue reaction to infection with *M. leprae*. The secondary deformities occur as a result of neglect of the primary deformities. Therefore it can be assumed that the secondary deformities may be associated with demographic and socio-economic factors. Hence the following variables were taken for analysis.

DEMOGRAPHIC FACTORS AND DEFORMITY STATUS

R e s i d e n c e

While comparing the deformity in rural and urban residents, 58 % of the rural respondents had secondary deformities where it was higher at 75 % for the urban respondents. It appears to be a remarkable finding because there is a pre-existing notion that the rural patients are more likely to develop secondary deformity. However, the reason for the finding of higher deformities in urban patients is unknown. It may be due to the life style in urban society in which people are mostly self-dependent to perform their own work, have more exposure to technological facilities and face a greater struggle for survival.

S e x

In comparison to males, females had a higher percentage of secondary deformity. Among the male respondents, 59 % had secondary deformities while this was 67 % for females. This may be due to the pattern of work in Nepalese cultures where females use their hands and feet more frequently than males in their daily house hold work such as cooking, washing, cutting etc. This is opposite to the findings of a study done by Kartikeyan and Chaturvedi (4) where they had reported that the percentage of deformity in males was 13.5 while in females it was 10.3.

A g e

A significant difference was found in the occurrence of secondary deformity in two age groups. While 29% of those below 30 years of age had secondary deformities, 70% of those above 30 years had the deformities. This may be due to the hazardous exposure in occupations, which is more likely to be faced by people of older age in comparison to the younger age group. Even chi-square test was significant ($X^2 = 10.09$) for these two age groups. However the question remains: is it due to older age or due to the longer period of disease? This could not be clarified in this study because while analysing data for secondary deformity and age, duration of the disease was not taken into consideration. However, this result suggests the need to explore the reason of higher percentage of secondary deformities in people over 30 years of age.

E t h n i c i t y / c a s t e

Nepal has always been a meeting ground for different peoples and cultures, and the Nepali society is constituted of a number of ethnic groups. Moreover, the society is divided into various castes and sub castes. The caste/ethnicity of the respondents was divided into 4 groups – the high caste comprising brahmins and chhetris, the low caste comprising the damai (tailor), kami (black smith), sarki (cobbler), the Mongoloid group comprising rai, tamang, guring, magar, sherpa, newar etc., and the Terai origin caste group comprising tharu, teli, sah and others of Indian origin.

Among the higher caste respondents, 63 % had secondary deformities while this figure was 78 % for the low castes, 55 % for the Mongoloid group and 58 % for the group of Terai origin. The lower caste patients are more susceptible to develop secondary deformity in comparison to the other castes. This may be due to their lower socio-economic conditions. In the Nepalese context, more lower caste people are in the lower strata of occupation as well as economic conditions, as shown in Table 1.

Table 1: Demographic factors vs deformity status of respondents

Residence:

Rural	34 (42%)	46 (58%)	80	NS
Urban	5 (25%)	15 (75%)	20	
Total	39	61	100	

Sex:

Male	29 (41%)	41 (59%)	70	NS
Female	10 (33%)	20 (67%)	30	
Total	39	61	100	

Age:

<30 years	15 (71%)	6 (29%)	21	
>30 years	24 (30%)	55 (70%)	79	X ² =10.09
Total	39	61	100	P<0.01

Ethnicity/caste

Higher	15 (37%)	26 (63%)	41	NS
Lower	2 (22%)	7 (78%)	9	
Mongoloid	14 (45%)	17 (55%)	31	
Terai origin	8 (42%)	11 (58%)	19	

Total 39 61 100

PRIMARY SOCIO-ECONOMIC FACTORS AND DEFORMITY

E d u c a t i o n

While comparing the secondary deformities rates between literate and illiterate groups, it was found that the proportion of secondary deformity was higher in the illiterate (64%) in comparison to literate people (57%). This finding suggests that illiterate patients are more likely to develop secondary deformities. This may be due to the capacity of literate patients to understand and follow the instructions given by medical workers to protect themselves from secondary deformity. Similar findings have been reported by Kartikeyan and Chaturvedi (4). In their study, illiterate patients had a higher deformity rate (14.5%) as compared to literate patients (7.3%).

I n c o m e

The respondents showed a wide disparity in terms of income, with the income ranging from zero to more than ten thousand rupees a month. The respondents were broadly categorised into “No income” and “Some income” groups. It was found that 68% of the respondents with secondary deformities had no income at all, while only 50% respondents with secondary deformities had some income. In the “some income” group, there was no difference in the occurrence of primary and secondary deformities. In the ‘no income’ group, the occurrence of secondary deformity was much higher (68%) than primary deformity (32%). This may be due to the pressure of work to earn their living because of which the ‘no income’ group is more prone to develop secondary deformity from their existing primary deformity, or due to failure to get work on account of severe deformity.

O c c u p a t i o n

The respondents were of various occupational statuses. The respondents were categorised into two groups according to the nature of their work. Those who need to use their hands and feet more frequently to perform their jobs were categorised as ‘Manual Worker’ and the rest as ‘Non Manual Worker’. Most of the patients (69%) were manual workers. This may be due to two reasons. Firstly, Nepal is an agricultural country, so most of the population depends on agricultural subsistence, which requires manual work. Secondly, after contracting leprosy, the patients are likely to be left alone to address their daily needs (cooking, washing etc.) by themselves due to the high stigma even within the family. While comparing the occurrence of secondary deformities, 64% of the manual workers have had secondary deformities while this percentage was only 55 % in the non-manual workers.

T a b l e 2 : P r i m a r y S o c i o - e c o n o m i c f a c t o r s v s d e f o r m i t y s t a t u s o f r e s p o n d e n t s

Socio-economic factors	Deformity status		Total	X ²
	Primary deformity	Secondary deformity		
Education:				NS
(1) Literate	18 (43%)	24 (57%)	42	
(2) Illiterate	21 (36%)	37 (64%)	58	
Total	39	61	100	
Income:				NS
(1) No Income	16 (32%)	34 (68%)	50	
(2) Some Income	25 (50%)	25 (50%)	50	
Total	41	59	100	
Occupation:				NS
(1) Manual Worker	25 (36%)	44 (64%)	69	
(2) Non Manual worker	14 (45%)	17 (55%)	31	
Total	39	61	100	

CONCLUSION

In this study, while examining the relationship between secondary deformity and other variables, no significant differences were found except in relation to the age group. The existing notion that rural people have higher chances of developing secondary deformity is not supported in this study where three fourths of urban residents had secondary deformities while only fifty percent of rural residents had secondary deformities. However, in this study, the difference in the proportion of these three variables (education, economy and occupation) and secondary deformities are not significant possibly because of the small sample. But it is seen that there is a trend towards a possible relationship between secondary deformity and educational, economical and occupational status. The findings suggest that if people are from a lower educational and economic status, they have more chances of developing secondary deformities. Similarly, the secondary deformity is higher in manual workers compared to the non-manual worker.

This study could not determine the causation of secondary deformity because it was confined to a limited number of patients in the hospital setting. Further qualitative research is needed to explore risk factors for the development of secondary deformities in patients with leprosy related neuropathy in the community. It is important to know the patient's explanatory model of secondary deformity, that is, what they think is the cause and what they did to deal with the problem of deformity, in order to plan appropriate interventions.

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