

A SITUATIONAL ANALYSIS OF NUTRITION CARE IN HIMACHAL PRADESH

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ABSTRACT

This study was undertaken in Himachal Pradesh to know about nutrition related 40 programmes which are being implemented at present by various governmental and non-governmental agencies. Food supplementation and educational activities were studied. Fourteen per cent of children below six years of age and 5.4 per cent of pregnant and lactating women were covered by nutrition supplementation. Select operational issues for programme implementation were also analyzed. Certain important findings are highlighted in this article.

In accordance with the constitutional directives and the National Policy for Children, it has been a government endeavor to improve the nutritional status of the people¹. Several programmes were initiated. The first and second five year plans aimed at increased food production, and some efforts for supplementary feeding, nutrition surveys and prevention of food adulteration were made. In the third plan, Applied Nutrition Programme (ANP) was started with the aim of increasing the production of food and providing supplementary food to vulnerable groups. Increased food production has been the constant aim of all the plans. A beginning was made for a systematic development of subsidiary foods and diversification of dietary intake. Under this plan the Mid-Day-Meal (MDM) programme, which was started in 1925, also picked up momentum and the government stepped it up on a nationwide basis in 1962-63. The fourth plan had more programmes on nutrition with emphasis on vulnerable groups. The fifth plan laid down an integrated approach for improving nutrition. The sixth plan aimed at improving the levels of nutrition and health through consolidating and expanding the integrated child development services. The new 20 point programme envisages accelerated nutrition programmes for pregnant women, lactating women and children, especially in tribal, hilly and backward areas. Supplementary feeding as a nutrition intervention, is to be augmented in the seventh five year plan².

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Several government, non-government and voluntary organizations are involved in funding or implementing various nutrition and nutrition-related programmes. Some reports and studies are available, on selected aspects of individual programmes. For example, Special Nutrition Programme (SNP) was evaluated for its impact and general functioning of feeding centers of Special Nutrition Programme^{3,4}. Several studies have been conducted to evaluate the Applied Nutrition Programme⁵. They identified several lacunae in the operational aspects. The Integrated Child Development Service has been evaluated twice by the Programme Evaluation Organization of Planning Commission^{6,7}.

There is no comprehensive study of nutrition or nutrition-related programmes, which gives details of all programmes at national, State, or district levels. National and regional level policy and planning bodies have identified the need for area-based and region wise details on nutrition programmes. This would provide an information-base for planning and implementing programmes for improved nutritional status of people at the state and even perhaps district levels. Measures may thereafter be instituted for improved coordination and also be avoid duplication of efforts. Mechanisms for optimal utilization of existing resources may be suggested.

METHODOLOGY

Since, the delivery of services in hilly and geographically difficult areas is a national priority, the state of Himachal Pradesh was chosen for this study.

At Central level, a list of on-going nutrition programmes was prepared, after visiting 24 organizations. The organizations as well as functionaries through whom the nutrition services are being delivered in Himachal Pradesh was identified. Information was collected by interviewing the concerned officers with the aid of semi-structured schedules; as well as, study of relevant records and documents. The objectives, contents, coverage and infrastructure available for delivering services were systematically analyzed. Data were collected from March to June, 1984. Forty four organizations were contacted in Himachal Pradesh, and information collected on 58 programmes.

While collecting the information, some problems were faced. Whereas, total financial outlay of nutrition programmes and food costs was available, the financial allocation could not be generally obtained separately for salaries, fuel, transport, POL and other contingencies. It was because the same person(s) often had several responsibilities, and the operating costs particularly at the top and middle management levels, were shared in several programmes. Another problem was reconciliation of different figures given on a particular item. For example, in a few instances, number of beneficiaries covered as given by the State, Centre and Organization itself was observed to be inconsistent in a few instances. Also inconsistencies in a few reports from different departments, were observed.

For this study, State level data were relied upon; also, reports from the nodal department were referred to, instead of other departments. A third problem was sorting out inconsistencies in the information given by different persons on the same item. Generally, this related to the details, and it was also noticed that sometimes, persons who had been given recent charge of the programme, were not adequately informed. These differences were reconciled through fresh interviews.

For the purpose of this study, nutrition programmes are operationally defined as those programmes which provide nutrition supplements (protein, calories or specific nutrients such as Vitamin A, iron and folic acid, iodine, etc.) as well as those imparting nutrition education.

FINDINGS AND DISCUSSION

Nutrition Programmes

Fifty-eight (58) programmes have been studied. Forty (40) programmes relate directly to nutrition. Of these 40 programmes, 16 programmes provide primarily nutrition supplements with protein and calories; 18 programmes carry out only nutrition education activities; 3 programmes provide both nutrition supplementation and nutrition education; and 3 programmes give specific nutrient supplements (Vitamin A, iron and folic acid and iodine) as well as nutrition education. In the 18 programmes indirectly related to nutrition, 6 are involved in training in nutrition; and 12 carry out either educational or income-generating activities.

Twelve (12) different organizations/departments are responsible for implementing nutrition programmes, 7 of which are governmental and 5 are voluntary organizations. Chart I and 2 give an overview of the organizational set-up.

The Himachal Pradesh Social Welfare Advisory Board is one of the voluntary organizations which provides support/funds to 86 registered units (each unit is registered separately). These 86 units are in turn affiliated to 36 national, State or local voluntary organizations.

In the programme mentioned above, it is suggested that nutrition activities, particularly those related to nutrition education, be incorporated. Also, in the 16 programmes providing only nutrition supplementation, nutrition education activities may be directed towards the parents of the children receiving food supplements. The activities being undertaken by various organizations are given in Table 1.

Supplementary Nutrition Programmes

The 19 supplementary nutrition programmes (providing protein and calories) are implemented through 3 governmental departments and 5 voluntary organizations. Three supplementary programmes are managed by the Directorate of Welfare (Integrated Child Development Services (ICDS), Special Nutrition

CHART 1
ORGANISATIONAL SET UP - STATE LEVEL

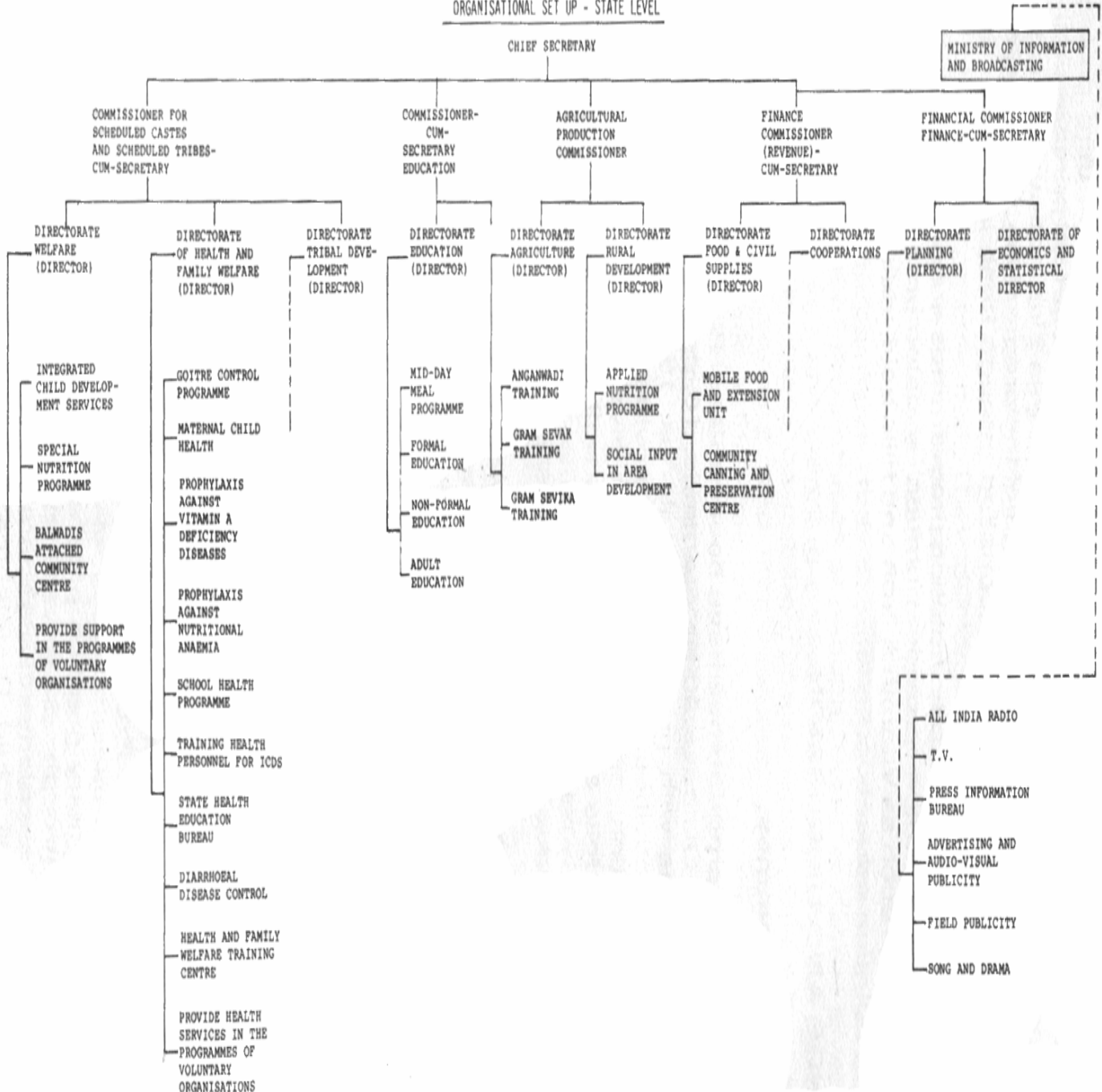


CHART 2
VOLUNTARY ORGANISATIONS
ORGANISATIONAL SET UP - STATE LEVEL

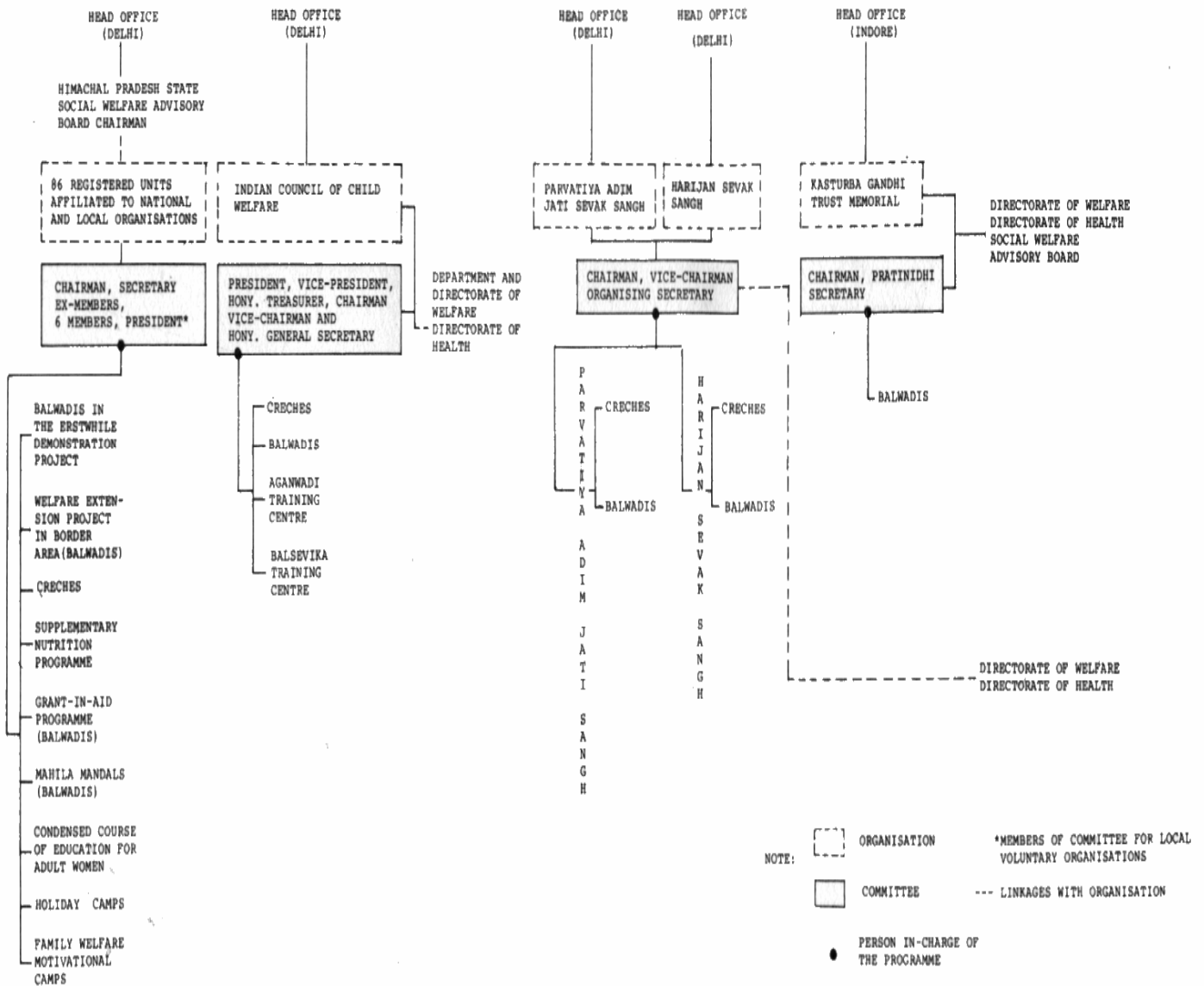


TABLE 1
SERVICES PROVIDED ALONG WITH SUPPLEMENTARY NUTRITION

S.No.	Name of the programme	Name of the Agency	Other services given alongwith supplementary nutrition					
			Nutrition Educa- tion	Specific Nutrient given		Health Activities	Income Gene- ration	Education Activities
				Vitamin A	Iron & Folic Acid			
1	2	3	4	5	6	7	8	9
1.	Integrated Child Development Services	Directorate of Welfare	+	+	+	+	-	+
						Health check-ups Immunization, Referral Services. Monitoring Growth and Development		Non-formal pr school and health education
2.	Special Nutrition Programme	Directorate of Welfare	-	-	-	Health check-ups Immunization, Monitoring Growth and Development		
3.	Balwadis attached with Community Centres	Directorate of Welfare	-	-	-	Immunization	+	+
								Non-formal pri school education
4.	Applied Nutrition Programme	Directorate of Rural Development of	+	-	-	-	+	+
								Health education
5.	Social Input in Area Development	Directorate Rural Development	+	-	-	+		+
						Health check-ups Immunization		Non-formal Health and Adult Educa- tion, Functional, Literacy

6.	Mid-Day-Meal Programme	Directorate of Education	+	-	-	+	-	-
			(Through Formal Education)			Health check-ups, Immunisation, Monitoring Growth and Development, Referral Services (Through School Health Services)		
7.	Creches	Indian Council of Child Welfare	-	-	-	+		Non-formal pre-school education
	Balwadis	Indian Council of Child Welfare	-	-	-	+		+
						Health check-up Medicines		Non-formal pre-school education
9.	Creches	Parvatiya Adim Jaati Sevak Sangh	-	-	-	+	-	+
						Health check-up Immunisation, Referral, Monitoring Growth and Development		Non-formal pre school education
10.	Balwadis	Paravatiya Adim Jaati Sevak Sangh	-	-	-	+	-	+
						Immunisation, Referral, Monitoring Growth and Development		Non-formal pre-school education
11.	Creches	Harijan Sevak Sangh	-	-	-	+	-	+
						Health check-up Immunisation, Referral, Monitoring Growth and Development		Non-formal pre-school education
12.	Balwadis	Harijan Sevak Sangh	-	-	-	+	-	+
						Immunisation, Referral, Monitoring Growth and Development		Non-formal pre-school education

13.	Balwadis	Kasturba Gandhi Trust Memorial	-	-	-	+	+
						Health check-up Immunisation	Non-formal preschool education
14.	Demonstration Project Balwadis	Himachal Pradesh Social Welfare Advisory Board (HPSWAB)	-	-	-	-	+
							Non-formal preschool education
15.	Welfare Extension Project	Himachal Pradesh Social Welfare Advisory Board (HPSWAB)	-	-	-	+	+
						Immunisation, Health check-up Referral, Monitoring Growth and Development	Non-formal preschool education
16.	Creches Programme	Himachal Pradesh Social Welfare Advisory Board (HPSWAB)	-	-	-	+	+
						Immunisation, Health check-up Medicines	Non-formal preschool education
17.	Supplementary Nutrition Programme	Himachal Pradesh Social Welfare Advisory Board (HPSWAB)	-	-	-	-	+
						Immunisation Health check-up	Non-formal preschool education
18.	Grant-in-aid one year Balwadi	Himachal Pradesh Social Welfare Advisory Board (HPSWAB)	-	-	-	-	+
							Non-formal preschool education
19.	Mahila Mandal Balwadi Programme	Himachal Pradesh Social Welfare Advisory Board (HPSWAB)	-	-	-	-	+
							Non-formal preschool education

+ Services are provided

Programme (SNP) and Balwadis attached with Community Centers), 2 by Directorate of Rural Development (Applied Nutrition Programme[ANP] and Social Input in Area Development [SIAD]) and one by Directorate of Education (mid-day meal programme). The five voluntary organisations implementing nutrition supplementation programmes are *Harijan Sevak Sangh* (HSS), *Parvatiya Adim Jaati Sevak Sangh* (PASS), Kasturba Gandhi Trust Memorial (KGTM), Indian Council of Child Welfare (ICCW) and Himachal Pradesh Social Welfare Advisory Board (HPSWAB). The Central Social Welfare Board, through the Himachal Pradesh Social Welfare Advisory Board also supports balwadis in the Erstwhile Integrated Child Welfare Demonstration Project; Welfare Extension Project; mahila mandals; grant-in-aid one-year balwadi programme; crèches programme and the supplementary nutrition programme.

Supplementary nutrition programmes are being implemented in all the 12 districts of Himachal Pradesh, through 2963 feeding centres. Of these 1631 (81.9 per cent) feeding centres are in rural areas, 262 (13.1 per cent) in tribal areas and 100 (5.0 per cent) in urban areas. The supplementary nutrition programmes for children primarily aim at reducing malnutrition, morbidity and mortality. The mid-day meal programme for primary school children has, in addition to the above, the aim of improving attendance and enrolment in schools. The programmes for pregnant women aim at reducing malnutrition, as well as reducing low-birth weight in newborns.

A total of 138521 beneficiaries are covered by supplementary nutrition programmes (122859) children and 15662 women). For Himachal Pradesh as a whole, 13.9 per cent of children below 6 years, 14.3 per cent of children below 7 years of age and 5.4 per cent of pregnant women and lactating mothers are being covered by nutrition supplementation programmes as shown in Table 2.

Age is the main criterion for selecting children in all the 18 supplementary feeding programmes for children below 6 years of age (in the ICDS, weight has also been a criterion for selecting child beneficiaries). The Mid-Day Meal Programme is for primary school children in Class I and II in select schools. In 4 programmes, pregnant and lactating mothers receive nutrition supplements. Socio-economic deprivation is also supposed to be considered for selecting beneficiaries.

It was observed, in programmes where information was available, that the outreach of services to those below 3 years was inadequate, in comparison with services for children between 3 and 6 years. It is suggested that directives be given to ensure that more children avail of services below 3 years, since nutrition support is more critical for the growth and development of younger children.

Food Supplements

The amount of protein and calories to be given have been specified in several programmes (around 300 calories and 10-12 grams of protein for children; and

TABLE 2
NUMBER OF CENTRES AND BENEFICIARIES OF NUTRITION SUPPLEMENTATION
(PROTEIN AND CALORIES) PROGRAMME

NE: Not Eligible

S.No.	Programmes	No. of Centres	No. of Beneficiaries Children Women (Pregnant + Lactating)	Total	Beneficiaries covered by each pro gramme (% of total bene ficiaries)
1.	Integrated Child Development Services	1067	48,909 (6.65)	9,690 (3.3)	58,599 42.3
2.	Special Nutrition Programme	463	31,352 (4.26)	5,948 (2.05)	37,300 26.9
3.	Balwadis attached to Community Centre	23	470 (0.06)	NE	470 0.3
4.	Mid-Day Meal	583	20,000 (8.1)	NE	20,000 14.4
5.	Applied Nutrition Programme	Not available			
6.	Social Input in Area Development	30	836 (0.11)	24 (0.018)	860 0.6
7.	Indian Council of Child Welfare: Creches	158	3,950 (0.54)	NE	3,950 3.0
8.	Indian Council of Child Welfare: Balwadis	55	1,650 (0.22)	NE	1,650 1.0
9.	<i>Parvatiya Adim Jaati Sevak Sangh</i> : Creches	11	275 (0.44)	NE	275 0.2
10.	<i>Parvatiya Adim Jaati Sevak Sangh</i> : Balwadis	14	553 (0.08)	NE	553 0.4
11.	<i>Harijan Sevak Sangh</i> : Creches	3	75 (0.01)	NE	75 0.05
12.	<i>Harijan Sevak Sangh</i> Balwadis	19	760	NE	760 0.50
13.	Kasturba Gandhi Trust Memorial: Balwadis	6*	199*	NE	199* -

14.	Balwadis in Erstwhile Demonstration Project	14	420 (0.06)	NE	420	0.3
15.	Welfare Extension Project - Border Area	18	375 (0.05)	NE	375	0.3
16.	Creches Under HPSWAB*	389	9,725 (132)	NE	9,725	7.0
17.	Supplementary Nutrition Programme (HPSWAB)	20	508 (0.07)	NE	508	0.4
18.	One year Grant-in-Aid (Balwadis)	34	1,020 (0.14)	NE	1,020	0.7
19.	Mahila Mandal (Balwadis)	61	1,953 (027)	NE	1,953	1.0
		2,963	1,22,859 (below 6 yrs. 14 %)	15,662 (5.36)	1,38,521	100.0
			(below 7 yrs. 14.3%)			

Figures in parentheses indicate proportion of eligible children or women covered by supplementary nutrition programmes.

'Himachal Pradesh Social Welfare Advisory Board.

*5 Centers and 171 Beneficiaries of Kasturba Gandhi Trust Memorial are included in one year Grant-in-aid Programme, therefore, have not been counted again to avoid duplication.

around 400 calories and 20 grams of protein for women, perday). In actual practice, however, food supplements are given according to the money available (30 paise per day per child beneficiary and 50 paise per day per woman). It was not possible to ascertain whether the food supplement was given exactly according to the recommended allowances. Generally, processed pulses, cereal-pulse gruels, cooked vegetables, milk, snacks and fruits are given. Only single meal is given. The total number of feeding day in different programmes range between 200 and 324 days in a year (except for ANP, where food is given once a week).

Food supplies are not obtained from any external agency. In all 19 supplementary feeding programmes, the food was procured either by (i) local purchase at the centre by the functionaries of 13 programmes; and (ii) through a set purchase-mechanism involving cooperatives/outlets of the Department of Food and Civil Supplies (6 programmes).

Lack of finances was identified as a major constraint for supplementary

feeding. Supplies were not regular, it was stated. Monotonous menus, as in the Midday Meal Programme, are not desirable. Instructions have been issued that 'suitable, locally available food' should be given. Officers felt that more specific instructions should be given, since, peripheral workers were not always competent to select the right type of food.

Health Inputs in Nutrition Programmes

The health inputs provided in nutrition programmes are immunization, health check-up, basic medical care, referral, monitoring growth and development in children and health education for mothers. Health inputs are provided mainly through the Health Department. In 7 programmes under voluntary organizations, private doctors also provide services (@ Rs. 25/- per visit, once a week). Health services are provided in 12 out of 19 nutrition supplementation programmes, though it is supposed to be given in 14 as given in Table 1.

In 4 programmes, there is no provision for health care and in the Mid-day Meal programme it is provided through school health services. However, all the components mentioned above are not provided in all the programmes. Out of the 19 programmes (including MDM), comprehensive services are available in 4 programmes only (ICDS and Welfare Extension Project and Creches of PASS and HSS); immunization in 13; health check up in 12; referral in 7; monitoring growth and development in 7; and health education in 3 programmes providing supplementary nutrition.

In order to maximize the impact of nutrition supplementation, it is essential to provide a package of services, including health care.

Nutrition Education

Six government departments and one voluntary organization are involved in providing nutrition education, through 24 different programmes in Himachal Pradesh. Two organizations State Health Education Bureau (SHEB), and Mobile Food and Extension Unit (MFEU) have been established with the sole objective of imparting health as well as nutrition or nutrition education; 16 programmes include nutrition education as one of the organization's several activities in 3 programmes, nutrition education is provided along with supplementary nutrition; and in 3, along with supplementation with specific nutrients (Vitamin A, iron and folic acid and iodized salt).

In 4 programmes (SIAD, SHEB, MFEU and Field Publicity Unit [FPU]), projectors and films have been supplied. The UNICEF and concerned ministries at central level are responsible for supplying posters and printed materials for their respective programme in Himachal Pradesh. In the State itself, posters and charts are prepared and distributed to the community by the State Health Education Bureau.

Various channels of communication like interpersonal, mass media and traditional folk media are used for nutrition education. Film shows, exhibitions, demonstrations, group-talks, songs, *qwalis* and puppet shows are organized. Topics covered in most programmes include balanced diet, diet for pregnant women, lactating mothers and for infants. Emphasis has also been given on the food requirements during diarrhea, anemia, protein-energy **malnutrition and other conditions of ill-health.**

RECOMMENDATIONS

Since , there are too many organizations implementing services , it has been stated by some that there may be 'duplication' of effort. According to the information available, it has been observed that at the delivery end, there is no 'duplication' and much of the eligible population remains uncovered; or often, inadequately covered. The problems of centralizing such services are only too well known, and it is not recommended to put all these services units under one umbrella. In terms of effectiveness and efficiency, more may be achieved through strengthening each unit, and promoting collaboration as well as inter-sect oral coordination. The ICDS has perhaps, a better system of coordination laid down than other programmes.

In order to maximize the impact of nutrition supplementation, it is essential to provide a package of services in all nutrition programmes. Which includes at least health care, nutrition education, Vitamin A, iron and folic acid along with nutrition supplementation? The recommendation of the Government of India should be speedily implemented on the same lines.

It is essential to enhance the capabilities of individuals for instituting better nutrition practices, which would lead to an improved nutritional status of people. Inadequate knowledge of nutrition has been identified as one of the impediments in improving the nutritional status of people. It is suggested that a concerted effort be made to include nutrition education as one of the essential components in as many programmes as possible. Several researchers have already identified simple, basic information in nutrition, which may be incorporated. Care will have to be taken to ensure that these are culturally relevant, and that the messages put forth by different programmes and organizations are not inconsistent.

It was also observed that there was no common platform where officers from different programmes incorporating nutrition education, may meet and discuss technical aspects of common interest. It is suggested that a forum be instituted where regular discussions on nutrition education may be held. These forums should invite scientists and other experts to keep those implementing programmes up-to-date.

More imaginative menus should be planned within the existing resources. The training given to field workers needs to be more field-based, and should concentrate

on equipping the trainees with skills required for their job responsibilities, rather than emphasis on knowledge alone.

Special attention needs to be given to ensure regular supplies or money for the purchase of food. The services in feeding centers (those other than nutrition supplementation) are not given on the fixed days because there is no food, and children stop coming to the centers. The underutilization of existing facilities may be attributed largely due to the irregular services provided, because of the delay in sanctioning funds for the programmes. As the continued availability of services is one of the most critical operational requirements for the success of the programme.

A careful checking is required to see whether the money provided per beneficiary per day is adequate to purchase food for supplementation according to recommended protein and calories. In most of the nutrition supplementation programmes, one of the stated objectives is improvement of nutrition status of beneficiaries; little improvement can be expected if the supplement does not provide the required protein and calories. Information collected suggests that the supplement may not be adequate.

Information on the profile of beneficiaries receiving supplementary nutrition available with State and district level offices did not reveal whether the intended target groups were reached. Programme officers who monitor these services supposed to know whether the nutrition supplements reached those who need this service. Both selection criteria for beneficiaries and the implementation of the programme have to be reviewed from these aspects.

There are 5 voluntary organizations implementing nutrition programmes. One of these organizations, the Himachal Pradesh Social Welfare Advisory Board, supports 86 registered units. It was stated by officers from voluntary organizations that more interaction with government organizations should be promoted. Also, there was no contact amongst different voluntary organizations working in the same¹ area. There seemed to be a feeling amongst them that their efforts are not being supported, or recognized. Procedural delays, both within the organization itself at different levels, as well as in sanctions from the government, affected their functioning. It is suggested that a mode be made to bring voluntary agencies together. Also, interaction between the government and voluntary organizations needs to be promoted. As a first step, nutrition training programmes and conferences may seek participation from both governmental and nongovernmental organizations, together in common forums. Nutrition planning efforts at State and district levels should seek active participation of the voluntary organization.

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इस अध्ययन का संचालन हिमाचल-प्रदेश राज्य में किया गया था। इस अध्ययन का उद्देश्य सरकारी तथा गैर सरकारी संगठनों द्वारा राज्य में पोषण से संबंधित चलाये जा रहे लगभग 40 कार्यक्रमों के बारे में जानकारी प्राप्त करना था इस अध्ययन के अर्न्तगत पूरक आहार कार्यक्रम तथा इससे सम्बद्ध शैक्षिक गतिविधियों के बारे में अध्ययन किया गया था। अध्ययन परिणामों से ज्ञात होता है कि पोषण पूरक-आहार कार्यक्रम के अर्न्तगत छः वर्ष से कम आयु वर्ग के 14 प्रतिशत बच्चों को कवर किया गया था और 5.4 प्रतिशत स्तनपान कराने वाली तथा गर्भवती महिलाओं को संरक्षण प्रदान किया गया था। इस लेख में कार्यक्रम-क्रियान्वयन संबंधी कुछ चुने हुए परिचालनात्मक पक्षों के बारे में भी चर्चा की गई है।

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HEALTH PROBLEMS OF RURAL WOMEN

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ABSTRACT

The study was conducted in two villages of Hisar district (Haryana) to determine the nature and extent of health problems of rural women. The data were collected from one hundred randomly selected rural ladies by interviewing them with the help of an interview schedule developed for the purpose. The identified health problems were classified.

The findings of the study indicated the prevalence of a number of health problems among rural women and a need was felt for their education on health aspects. A sizeable number of them were found to have suffered from bronchitis, coryza, indigestion, constipation, diarrhea, conjunctivitis, dandruff, tartar deposits on teeth, skin diseases, gynecological diseases and some other diseases like rheumatism, arthritis, etc.

The existence of a government hospital in village had no association of significant level with the health problems of rural women. Majority of the respondents perceived the treatment given in government hospital to be not effective and several other constraints in availing of the treatment facilities.

Health is an asset to man and to his community and has come to be regarded as a prerequisite to socio-economic development. The active role of women in the development of agriculture, animal husbandry, village cottage industries and several other facets of rural life besides the home and family is well established and is a known fact. It would be not proper to think of economic development in rural areas, without active involvement and participation of the women folk in the development programmes. In the development programmes, it would also be unwise to expect active participation and involvement of individuals who are not fit or unhealthy. Often women because of their household responsibilities and ignorance of health and hygiene practices tend to neglect their illness till their health problems get aggravated and they become too sick to move around and attend to their normal household chores. All the more, they are dependent on others in the family to get

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them needed medical attention. According to an estimate, fifty per cent of rural women in the country are daily wage earners and they do not have time to go to hospital without losing their wages. As a consequence of this vicious circle, inadequate medical facilities in rural areas and poor resources to obtain treatment from private medical practitioners, women in villages is often become a victim of a number of health problems.

Two-third of the population in the country consists of women of child bearing age and children under the age of fifteen years. Since, they constitute a particularly vulnerable group; they suffer most severely from consequences of socio-economic development. The existing health services being provided through a network of government hospitals, dispensaries, and primary health centers' not reach or remain underutilized by women, especially, in rural areas. Otherwise also, the health care provided to rural areas is glaringly disproportionate to the needs and abnormally low as compared to urban areas. Under these circumstances, it was considered worthwhile to take a stock of the health status of rural women. With this background, the present study was undertaken to determine the nature and extent of health problems of rural women and constraints encountered by them in availing of the treatment facilities being provided by the government hospitals.

METHODOLOGY

The study was conducted in purposively selected Hisar district (Haryana). Two village, namely Alipur and Khararwere selected randomly, one of these had a government hospital and the other had no government hospital or a dispensary. About one hundred households (50 households from each of the two villages) were selected randomly. The female head of the family irrespective of its being a joint or nuclear family constituted the respondents of the study.

Health problem referred to any type of disease or sickness which may affect the health or general well being of the rural women. The nature of health problem referred to its being contagious or of non-contagious type.

The extent of health problem referred to the degree of prevalence of a disease or sickness at a given period of time in an area.

For studying the health problems, the data were collected by interviewing the respondents with the help of an interview schedule containing structured questions. The instrument of observation was prepared by vigorously going through the standard procedures prescribed for the purpose including the testing of reliability and validity. The diseases which had actually affected them during one year preceding the date of data collection or at the time of observation were identified. The records available with the respondents in the form of OPD tickets, prescriptions, etc., were also examined to determine their health problems. The constraints in obtaining medical aid from government hospitals were studied with the help of a close-end question developed for the purpose.

RESULTS AND DISCUSSION

The health problems of rural women brought out by the study are shown in Table 1. A perusal of the table will indicate that more or less half of rural women had suffered from bronchitis (53 per cent) and coryza (48 per cent). Those suffering from asthma were 16 per cent. Majority of the people who were engaged in farming suffered from respiratory diseases'. Obviously then, prevention and control of respiratory diseases require special attention of the health department and specialized programmes need to be initiated.

The diseases of digestive system found among them were indigestion (29 per cent), constipation (23 per cent), diarrhea (17 per cent) and enteric fever (9 per cent). The diseases of gastro-intestinal tract mostly composed of diarrhea and dysentery were maximum in rural society². Lack of sanitation coupled with polluted water caused such diseases³. The widespread habit of defecating in fields in the vicinity of villages or in stream beds or on pathways so that water or flies transfers the amoeba or bacilli to the human mouth could be the main cause of these ailments.

TABLE 1
DISEASES PREVALENT AMONG RURAL WOMEN

Sr.No	Diseases	Percentage of Respondents		
		Overall N=100	With Hospital in Village N=50	Without Hospital in village N=50
1.	DISEASES OF RESPIRATORY SYSTEM			
	i. Bronchitis	53.00	54.00	52.00
	ii. Coryza	48.00	48.00	48.00
	iii. Asthma	16.00	18.00	14.00
	iv. Pneumonia	3.00	4.00	2.00
2.	DISEASES OF DIGESTIVE SYSTEM			
	i. Indigestion	29.00	20.00	38.00
	ii. Constipation	23.00	24.00	22.00
	iii. Diarrhoea	17.00	22.00	12.00
	iv. Enteric fever	9.00	12.00	6.00
3.	DISEASES OF URINARY TRACT			
	i. Cystitis	12.00	8.00	16.00
	ii. Nephritis	12.00	8.00	16.00
	iii. Retention of urine	6.00	8.00	4.00
	iv. Inability to hold urine	3.00	2.00	4.00

4.	DISEASES OF REPRODUCTIVE SYSTEM			
i.	Irregular menstrual cycle	13.00	8.00	18.00
ii.	Leukorrhoea	10.00	6.00	14.00
iii.	Irregular menstrual flow	6.00	4.00	8.00
iv.	Prolapse of vagina	4.00	4.00	4.00
5.	DISEASES OF EYE AND EAR			
i.	Conjunctivitis	19.00	18.00	20.00
ii.	Deafness	5.00	4.00	6.00
iii.	Otorrhoea	2.00	-	4.00
6.	DISEASES OF MOUTH			
i.	Tartar Deposit on teeth and molars	36.00	32.00	40.00
ii.	Dental Caries	29.00	36.00	22.00
iii.	Pyorrhoea	19.00	12.00	26.00
7.	DISEASES OF SCALP			
i.	Dandruff	19.00	10.00	28.00
ii.	Alopecia	7.00	2.00	12.00
iii.	Pediculosis	5.00	6.00	4.00
8.	DISEASES OF SKIN			
i.	Boils	9.00	8.00	10.00
ii.	Dermatitis	8.00	10.00	6.00
iii.	Scabies	7.00	12.00	2.00
iv.	Ringworm	3.00	4.00	2.00
v.	Eczema	1.00	-	2.00
9.	DEFICIENCY DISEASES			
i.	Vitamin A deficiency	19.00	16.00	22.00
ii.	Anaemia	5.00	4.00	6.00
iii.	Ostomalacia	4.00	4.00	4.00
iv.	Vitamin B deficiency	3.00	4.00	2.00
10.	SOME OTHER DISEASES			
i.	Headache	55.00	56.00	54.00
ii.	Rheumatism	29.00	24.00	34.00
iii.	Arthritis	27.00	28.00	26.00
iv.	Malaria	25.00	28.00	24.00
v.	Hysteria	5.00	4.00	6.00
vi.	Piles	1.00	2.00	

The study indicated that 12 per cent of rural women had suffered from cystitis and nephritis. The diseases like retention of urine and inability to hold urine were also reported though in a lesser proportion. The factors responsible for causing these diseases could be varied and many. Poor personal hygiene could be one of the predisposing factors for some of these diseases. Vaginal examination in such disease conditions is often refused by village people. As a consequence, problems are encountered in diagnosis and treatment. Moreover, the availability of diagnostic and treatment facilities for such type of ailments in villages is a remote possibility.

The diseases of reproductive system prevalent among rural women were irregular menstrual cycle (13 per cent), leucorrhoea (10 per cent), irregular menstrual flow (6 per cent) and prolapse of vagina (4 per cent). These diseases could be due to faulty dietary pattern or due to hormonal disturbances. Irregular menstrual cycle or flow could be due to anemia resulting from malnutrition or dysfunction of ovaries besides several other causes. General debility could be a predisposing factor for leucorrhoea. Prolapse of vagina might be due to repeated pregnancies, child delivering by untrained da/sifting of heavy loads when pregnant, lack of rest, etc. For want of proper guidance, non-availability of a lady doctor for consultation and treatment in villages, and lack of resources for getting treatment from specialists located in towns, the women suffering from reproductive diseases either remain untreated or get delayed medical attention. In most of the cases indigenous treatment suggested by elderly women is often tried.

The study further revealed that 19 per cent of rural women suffered from conjunctivitis. Lack of hygiene and unhealthy environment cause diseases of eye like conjunctivitis⁴. The untreated recurrent infections may result in total blindness in about (1 per cent) and defective vision in (4 per cent) cases⁵. Deafness (5 percent) and otorrhoea (2 per cent) result from injuries to ears which remain untreated in early stages. These disease conditions need specialized treatment which is often beyond the reach of the rural people. For treatment of such ailments indigenous practices, such as, stuffing the ears with chalk powder and animal urine are tried which further aggravates the condition leading to incurable proportions.

A sizeable number of rural women had tartar deposit on teeth and molars (36 per cent), dental caries (29 per cent), and pyorrhea (19 per cent). The prevalence of dental fluorosis is directly proportional to fluoride concentration of drinking water and dental caries is associated with fluorosis⁴. Lack of oral hygiene often results in tartar deposit on teeth and molars.

The diseases of scalp afflicting the rural women were observed to be dandruff (19 per cent), alopecia (7 per cent) and pediculosis (5 per cent). The researchers observed use of soap meant for clothes for washing hair. The corrosive action of this soap might be the cause of dandruff, alopecia and other diseases of scalp. *Pediculosis* (infestation with *Pediculus capitis*) is picked up through contact with infected persons and may affect the family. Of great importance in the prevention of scalp infestation is daily brushing and combing of hair and a worthy shampoo. Rural ladies instead of undertaking curative measures get such parasites picked up one by one which may not eliminate the disease or infestation.

The skin diseases observed among rural women were boils (9 per cent), dermatitis (8 per cent), scabies (7 per cent), ringworm (3 per cent), and eczema (1 per cent). For want of personal hygiene and clean surroundings, rural women often suffer from these diseases.

The deficiency diseases prevalent among rural women were found to be

Vitamin A deficiency (19 per cent), anaemia (5 per cent), osteomalacia (4 per cent) and Vitamin B deficiency (3 per cent). These deficiency diseases are found among people whose dietary intake is not up to the required level. The malnutrition among pregnant women of poor community is widespread. The malnutrition does not result only from poor diet but also from poor environment⁶.

Some of the other diseases prevalent among the rural women included headache (55 percent), rheumatism (29 per cent), arthritis (27 per cent), malaria (25 per cent), hysteria (5 per cent), and piles (1 per cent). The high complaint of headache by a majority of rural women need due attention of medical specialists. Nevertheless, headache among most of them could be due to their emotional states resulting possibly from tension and anxiety.

The chi square test indicated to have no significant association between the health problems of rural women and the existence of a government hospital in village.

Constraints in Obtaining Treatment from Government Hospitals

Majority of the rural women (81 per cent) reported that the treatment given in the government hospitals was not effective, and doctor required them to obtain treatment in private clinics (56 per cent). Some of the other important constraints included were inadequate availability of medicines in hospitals (43 per cent), no availability of medical specialists in hospitals (40 per cent), disease diagnosis not done properly (39 per cent), and expensive treatment (35 per cent).

IMPLICATIONS

Some important implications which the study has brought out are given as under:

1. The rural women were found suffering or had suffered from a number of diseases. This implies that a sizeable number of them are down with one or the other sickness at one time or the other. Undoubtedly, this may be having adverse repercussions on the healthy growth and overall development of rural families. Keeping in view the gravity of this problem, it is quite necessary to revamp the functioning of the existing health services being made available to the rural people in villages so that these are effectively utilized by the target group. The streamlining of the health care facilities and medical services has to be done in a way that the rural women avail themselves of the existing facilities to the maximum possible for promoting not only their health but also of their family.
2. The study has shown that the existence of a hospital or a dispensary in a village has no bearing on the prevalence of diseases among the rural women. Huge

amount drawn from public exchequer is invested in establishing hospitals at village level. The absence of relationship between the prevalence of diseases and existence of hospital in a village indicates that these institutions have yet to create an impact of their effective performance in tackling the health problems of the local people. On the one hand supervisory officials should ensure efficient performance of the hospitals and dispensaries, on the other hand they should emphasize on the medical and paramedical staff to develop personal contacts with as many local people as possible so that the available health care facilities are utilised by the maximum number of the local people.

3. Most of the health problems of rural women brought out by the study may be overcome by bringing home to them important and basic information about the causes or causal agents of diseases, transmission of diseases, preventive and control measures, sanitation and hygiene. Therefore, specially designed short duration training programmes tailored to the health needs of the rural women may be organized in villages by the health department. Likewise, camps should be organized in villages by the health department and medical institutions from time to time for providing health check up and treatment facilities at the door steps of the rural people. In these camps medical specialists be invited to provide specialized treatment. This shall also provide opportunities to the specialists to get firsthand experience of the health problems existing in villages.
4. The prevalence of deficiency diseases among rural women is a common feature. To control the wide spread incidence of deficiency diseases among rural women besides concerted educational efforts emphasizing on the need for adequate dietary intake, useful information pertaining to the correct methods of food preparation, healthy life style, utilization of available medical facilities, has to be brought home to the rural people. Educational efforts should not only cover the women folk but also the male members without whose cooperation it may not be feasible to make headway in improving over the existing situation.
5. The constraints, such as, hospital treatment not effective, required by doctors to attend private clinic, lack of medicines in the hospital, etc., indicate almost total neglect of the health problems of the rural women on the part of the authorities concerned. Such type of constraints distract the concerned clientele from utilizing the available health care facilities. It would be in the public interest to improve the quality of the health care services by diluting the constraints brought out by the study. The planners and policy makers should consider these constraints while planning and formulating health care services and facilities for the rural community.

Lkkjk'k

इस अध्ययन का संचालन हरियाणा राज्य के हिसार जिले के अर्न्तगत दो

गांवों में ग्रामीण महिलाओं की स्वास्थ्य-समस्याओं की प्रकृति तथा समस्याओं की व्यापकता का पता लगाने के लिए किया गया था। यादृच्छिक आधार पर चुनी गई 100 ग्रामीण महिलाओं से साक्षात्कार करके उनसे अध्ययन के लिए आंकड़े एकत्र किए गए थे। आंकड़े एकत्र करने के लिए इस उद्देश्य हेतु पूर्वनिर्मित साक्षात्कार-अनुसूची प्रयोग में लायी गयी थी। जिन स्वास्थ्य-समस्याओं का पता लगाया था उन्हें वर्गीकृत किया गया था।

अध्ययन परिणामों से पता चलता है कि ग्रामीण महिलाओं में अनेक प्रकार की स्वास्थ्य समस्याएं व्याप्त हैं तथा उन्हें स्वास्थ्य पक्षों के बारे में शिक्षित करने की आवश्यकता महसूस नहीं की गई थी। इनसे काफी बड़ी संख्या में महिलाएं श्वासनली शोथ, जुकाम, बदहजमी, कब्ज अतिसार, नेत्रशोध, डैनड्रफ, दन्त-शर्करा, चर्मरोगों, स्त्री रोगों, तथा वातरोग, गठिया आदि जैसे अन्य रोगों से पीड़ित पाई गई थी।

ग्रामीण महिलाओं की स्वास्थ्य-समस्याओं के निवारण की दिशा में गांव में स्थिति अस्पताल का कोई महत्वपूर्ण योगदान नहीं पाया गया था। अधिकांश उत्तरदाताओं की धारणा थी कि सरकारी अस्पताल द्वारा दिया जाने वाला उपसा प्रभावकारी नहीं होता है तथा उपचार सुविधाओं को उपयोग में लाने के बारे में अनेक अन्य कठिनाईयां भी बताई गई थी।

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STUDY OF MEDICO-SOCIAL PROFILE OF THE INSTITUTIONALISED BLIND IN PUNE

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ABSTRACT

A medico-social study of 196 institutionalized blind individuals was undertaken for a period of six months in Pune. Distribution of study population according to some of the underlying causes and their relationship to the various social determinants has been discussed in this paper. Two third of the study subjects suffered from the present disability either due to infection, malnutrition or accidents which were preventable to a great extent.

According to a WHO estimate there are 28 million blind people in the world. In India, there are about 9 million blind people and about 45 million visually handicapped. The prevalence of blindness in India is estimated to be 1.5 per cent of the population'. Thirty per cent of the blind in India lose their eye sight before they attain 21 years of age; most cases during the first 5 years of life². In a developing country like India, the problem of blindness is further compounded by social factors like poverty, illiteracy and lack of health education and medical facilities. To appreciate the phenomenon of blindness more comprehensively, one must understand not only the medical aspects of this malady but also the impact of its socio-economic determinants. Keeping this view in mind the study of medico-social profile of institutionalized blind was undertaken. Some of the salient findings of this study are highlighted in this article.

MATERIAL AND METHODS

This study was carried out in two institutions for the blind in Pune, namely (i) Technical Training Institute of Poona, Blind Men's Association which imparts vocational training to 100 blind men and women aged 18-40 years but without any residential facility, and (ii) Poona School and Home for the Blind Boys which imparts formal education to 100 blind boys aged 6-18 years and provide residential facilities.

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The study was carried out during the period from May 1 to October 31, 1985. A pretested schedule was used to record the findings of the interview and examination of the subjects. The schedule was devised in consultation with the Ophthalmologist of Armed Forces Medical College, Pune. In case of difficulty, the cases were referred to the Ophthalmologist at Command Hospital, Pune for expert examination and diagnosis. Socio-economic status of head of the family was assessed according to the Scale devised³. In case of children if any information was not forthcoming, the same was obtained from the school authorities.

FINDINGS AND DISCUSSION

Study Population. A total number of 196 blind subjects formed the study population; their ages were ranging from 6 to 40 years. Ninety-three percent of the study population was male, giving a male and female ratio of 13:1. They belonged to two religions only i.e. Hindu (190 subjects) and Muslims (6 subjects). Education-wise, 25 subjects were totally illiterate; 91 educated up to primary school level; 33 up to middle school level; 43 up to high school level; 3 up to higher secondary level and only 1 up to graduate level. Thus, 87 per cent of the study subjects were literate.

Study Population and Social Class. Distribution of study population according to social class is shown in Table 1. The table reveals that two third of the subjects were from lower social class and there was a gradual increase in proportion of the study population with lowering of social status. It is a well established fact that people from lower socio-economic status have higher prevalence of blindness⁴. The findings of other epidemiological studies of the institutionalized blind also observed that higher proportion of subjects belonged to lower socio-economic status^{4, 5, 6}.

Urban-rural Distribution: This is depicted in Table 2. Majority of the study population was urban with an urban and rural ratio of 1.76:1. A study conducted in Orissa in 1976 showed higher prevalence of blindness in urban area (urban 3.6 per cent and rural 2.2 per cent)⁷. However, National Sample Survey in 1981 revealed a higher prevalence of blindness in rural areas both at National level and at the Maharashtra State level⁸. But the findings of the present study compares favorably with the findings of the study of the institutionalized blind⁶.

Causes of Blindness. Distribution of study population according to causes of blindness is shown in Table 3. It is evident from this table that infections constituted the most important group of causes of blindness (44.39 per cent) and alongwith nutritional causes, accidents/injuries and toxemias of pregnancies accounted for almost two third of the blindness in the study population which was preventable. Congenital and hereditary causes accounted for almost one third (32.65 per cent) cases of blindness. In 4.59 per cent of cases, the cause could not be ascertained and they were put in the group of 'not known' a etiology. The findings of the present study compare favorably with those of the study of the institutionalized blind⁶. The findings of the other studies could not be compared with the present one due to different modality of classification of the causes of blindness.

TABLE 1
DISTRIBUTION OF STUDY POPULATION ACCORDING TO SOCIAL CLASS

Social Class	Number	Percentage
I	3	1.53
II	20	10.20
III	43	21.94
IV	129	65.82
V	1	0.51
Total	196	100.00

TABLE 2
URBAN/RURAL DISTRIBUTION OF THE STUDY
POPULATION

	Number	Percentage
Urban	125	63.78
Rural	71	36.22
Total	196	100.00

TABLE 3
CAUSES OF BLINDNESS IN THE STUDY POPULATION

Sr. No.	Causes of Blindness	Number	Percentage
1.	Congenital	47	23.98
2.	Hereditary	17	8.67
3.	Infections	87	44.39
4.	Nutritional	29	14.80
5.	Accidents/injuries	6	3.06
6.	Others (Toxaemia of Pregnancy)	1	0.51
7.	Not known	9	4.59
	Total	196	100.00

Ocular Lesions According to Anatomical Location: Distribution of the study population with reference to this factor is given in Table 4. It is clear that the anterior segment of the eye which is easily accessible to examination and hence whose lesions are potentially preventable by early detection and treatment, was the seat of lesion in approximately 56 per cent of cases. The findings of the other studies however show a wide variation in the distribution of anatomical locations of ocular lesions^{6,9}.

Distribution of the Blind According to Category of Visual Impairment:

From Table 5 it is obvious that more than a third of the subjects had no perception of

TABLE 4

OCULAR LESIONS ACCORDING TO ANATOMICAL LOCATION

S.No.	Ocular Lesions	No. of Cases	Percentage
1	Corneal pathology	89	45.41
2.	Lenticular lesions	21	10.72
3.	Retinopathies	22	11.22
4	Lesions of the optic nerve	6	3.06
5.	Intracranial optic pathways and brain	4	2.04
6	Bulbar atrophy (phthisis)	35	17.86
7.	Microphthalmos/Anophthalmos	19	9.69
Total		196	100.00

TABLE 5

DISTRIBUTION OF THE BLIND ACCORDING TO CATEGORY OF VISUAL IMPAIRMENT

S.No	Category of Visual Disability	Number	Percentage
1.	1 (6/18 to 6/60)	-	-
2.	2 (6/60 to 3/60)	11	5.61
3.	3 (3/60 to 1/60)	39	19.90
4.	4 (1/60 to light perception)	76	38.78
5.	5 (No light perception)	70	35.71
6.	(Undetermined/unspecified)	-	-
Total		196	100.00

light at all. Almost 95 per cent of the study population qualify for the definition of 'blindness' with 3/60 or less visual acuity and 100 per cent of them for 'legal blindness' (visual acuity 6/60 or less). It was, however, observed in other study that 93 per cent of the blind belonging to category 5 of visual disability as against only about 36 per cent in the present study and 4 per cent belonging to category 4 as against 39 per cent in the present study⁶.

Causes in Relation to Age of Onset: It is evident from Table 6 that one third of the subjects were blind at the time of birth and among the remaining, most of them acquired blindness before school-going age. The findings of the present study compare favorably with other studies^{6, 9}. However, in another study it was observed that 25 per cent of the subjects have onset of blindness before 15 years of age and 55 per cent beyond 39 years⁵. Since, maximum age of the subjects in the present study was 40 years, the findings cannot be compared with those observed in general population (including elderly above 40 years of age)⁵.

Causes of Blindness in Relation to Sex: It is clear from Table 7 that congenital causes accounted for higher proportion of blindness among male subjects compared to their female counterparts whereas hereditary causes were found only among the male subjects in the present study. Infections and nutritional causes were seen more among female subjects and the findings are consistent with the findings of other studies⁵. Application of *Kajal/Surma* and smoke in the kitchen may be attributed to higher proportion of blindness due to infections among female subjects. Similarly malnutrition is more prevalent among females in India⁷ and may be responsible for occurrence of higher proportion of nutritional blindness among them. Accidents and injuries accounted for about 3 per cent blindness among male subjects against nil in female counterparts and may be due to the fact that males are more prone to accidents¹.

Application of Kajal/Surma and Causes of Blindness: This is depicted in Table 8. It is seen that trachoma and conjunctivitis as causes of blindness were significantly associated with the practice of application of *Kajal/Surma* in the study population. This finding is in confirmity with the knowledge that the custom may predispose to ocular infections like conjunctivitis and trachoma¹.

Causes of Blindness and Social Status: It is seen that congenital and hereditary causes accounted for higher proportion of blindness among upper and middle social class subjects whereas infections and accident/injuries were responsible for higher proportion of disability among lower social class of study population as shown in Table 9. Statistical analysis showed high significance of the differences in various causes in relation to social status of the subjects. Authors of other studies have also found similar findings to those of the present study⁵. A higher proportion of blindness among people of lower socio-economic status were due to infections.

TABLE 6

CAUSES OF BLINDNESS IN RELATION TO AGE OF ONSET (IN YEARS)

Cause	At Birth	1 -5	6-10	11-15	16-25	26 and above	Total
Congenital	47	-	-	-	-	-	47 (23.98)
Hereditary	17	-	-	-	-	-	17 (8.67)
Infections	-	69	14	4	-	-	87 (44.39)
Nutritional	-	25	4	-	-	-	29 (14.80)
Accidents/injuries	-	1	2	2	1	-	6 (3.06)
Others (Toxaemia of pregnancy)	-	-	-	-	-	1	1(0.51)
Not known		5	2	1	1	-	9 (4.59)
Total	64	100	22	7	2	1	196 (100.00)

(Note: Figures in parentheses indicate percentages)

TABLE 7

CAUSES OF BLINDNESS IN RELATION TO THE SEX OF THE BLIND

Sr.No	Cause	Male	Female	Total
1.	Congenital	46 (25.27)	1 (7.41)	47 (23.98)
2.	Hereditary	17 (9.34)	-	17 (8.67)
3.	Infections	79 (43.41)	8 (57.15)	87 (44.39)
4.	Nutritional	25 (13.74)	4 (28.57)	29 (14.80)
5.	Accidents/Injuries	6 (3.30)	-	6 (3.06)
6.	Toxaemia of pregnancy	-	1 (7.14)	1 (0.51)
7.	Not known	9 (4.94)	-	9 (4.59)
	Total	182 (100.00)	14 (100.00)	196 (100.00)

(Note: Figures in parentheses indicate percentages)

TABLE 8

APPLICATION OF KAJAL/SURMA AND CAUSES OF BLINDNESS

CAUSES of Blindness Total	Application of Kajal/Surm		TOTAL
	Yes	No	
Trachoma	5	2	7
Conjunctivitis	5	14	19
Total	10	16	26

P=0.046 (BY EXACT TEST FOR 2X2 TABLES), SIGNIFICANT

TABLE 9

CAUSES OF BLINDNESS IN RELATION TO SOCIAL STATUS

S.No.	Causes	Upper and Middle Social Class	Lower Social Class	Total
1.	Congenital	21 (31.82)	26 (20.00)	47 (23.98)
2.	Hereditary	12 (18.18)	5 (3.85)	17 (8.67)
3.	Infections	19 (28.79)	68 (52.31)	87 (44.39)
4.	Nutritional	10 (15.15)	19 (14.61)	29 (14.80)
5.	Accidents/Injuries	1 (1.51)	5 (3.85)	6 (3.06)
6.	Others (Toxaemia of pregnancy)	-	1 (0.77)	1 (0.51)
7.	Not known	3 (4.55)	6 (4.61)	9 (4.59)
Total		66 (100.00)	130 (100.00)	196 (100.00)

χ^2 s 20.30; d.f. < 4; p < 0.001 (highly significant)

Note: (i) For statistical analysis values at serial No. 5, 6 and 7 have been clubbed together, (ii) Figures in parentheses indicate percentages.

Urban/Rural Distribution of Study Population and Causes of Blindness: It is seen from Table 10 that different causes were responsible for almost similar proportion of blindness among subjects both from urban and rural areas except in case of accidents/injuries and toxemia of pregnancy which were not seen in case of rural subjects. There was no statistically significant association between causes of blindness and urban/rural distribution of the study population.

CONCLUSION

The present study of 196 institutionalized blind subjects has revealed that almost two third blindness was attributable to causes preventable in nature. Proper health education and preventive precautions observed by the individual/parents should have prevented it. A critical analysis of association between certain social factors and causes of blindness revealed a higher proportion of subjects from the lower socio-economic status in whom infections were found to be the most predominant cause. Trachoma and conjunctivitis as causes of blindness were found to be significantly associated with practice of application of *Kajal/Surma* in the study population. Majority of the subjects were found to have become blind before school going age. Infections and nutritional causes were seen more among female subjects as compared to their male counterparts. No significant association could be ascertained between causes of blindness and urban/rural background or literacy status of the study population.

TABLE 10

URBAN/RURAL DISTRIBUTION OF STUDY POPULATION AND CAUSES OF

Sr.No	Causes	Urban	Rural	Total
1.	Congenital	29 (23.20)	18 (25.35)	47 (23.98)
2.	Hereditary	9 (7.20)	8 (11.27)	17 (8.67)
3.	Infections	57 (45.60)	30 (42.26)	87 (44.39)
4.	Nutritional	18 (14.40)	11 (15.49)	29 (14.80)
5.	Accidents/Injuries	6 (4.80)	-	6 (3.06)
6.	Others (Toxaemia of pregnancy)	1 (0.80)	-	1 (0.51)
7.	Not known	5 (4.00)	4 (5.63)	9 (4.59)
Total		125 (100.00)	71 (100.00)	196 (100.00)

χ^2_{198} : d.f. > 4; $p > 0.5$ (not significant)

Note: (i) For statistical analysis the values at serial No. 5, 6 and 7 have been clubbed together,
(ii) Figures in the parentheses indicate percentage

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पुणे में छः माह की अवधि के लिए 196 संस्थागत नेत्रहीन व्यक्तियों के बारे में एक चिकित्सकीय-सामाजिक अध्ययन का संचालन किया गया था। इस लेख में कुछेक अर्न्तनिहित रोगकारणों के अनुसार अध्ययनरत जनसंख्या के विभाजन तथा विभिन्न सामाजिक निर्धारक-पक्षों के साथ उन रोगकारणों के सम्बन्धों के बारे में चर्चा की गई है। यह पाया गया कि अध्ययन के अर्न्तगत लिए गए नेत्रहीन व्यक्तियों में दो-तिहाई व्यक्तियों की वर्तमान स्थिति का कारण या तो संक्रमण, कुपोषण अथवा दुर्घटना होना पाया गया था, जिनकी रोकथाम कर पाना काफी हद तक संभव था।

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STATISTICAL MEASURES OF UNDERNUTRITION: SOME THEORETICAL ASPECTS

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ABSTRACT

In this paper, an attempt has been made to construct statistical measures of under nutrition. First, a statistical measure of under nutrition is proposed for a single component of nutrition. Later on, an overall statistical measure has been built by combining the separate measures of under nutrition for various components.

Estimates of the incidence of under nutrition are needed if one wants to use nutritional criteria for determining food production and distribution policy. These estimates are also useful to illustrate the well being or poverty of a society. A rich and varied literature appeared in the last decade has dealt with the incidence of under nutrition.

A lot of work and controversial discussions have been carried out on the problem of specifying the minimum norms of various components (calorie, protein, calcium, vitamins, etc.) of nutritional intake by many authors. The important studies are¹⁻¹⁰ but no attention has been given to the construction of statistical measure of under nutrition. In this paper an attempt has been made to build some statistical measures of under nutrition.

Nutrition is not a single factor but a vector of which calorie, protein, calcium, fats, vitamins, minerals etc. are components. All these components in certain amounts are found to be medically necessary for normal human being. It is equally difficult to say which component of the vector is more important or which is less. But nutrition scientists have shown that all these constituents are very essential for the body. Undernourishment of these constituents is likely to lead to bad health, unworthy for work and prone to many diseases.

The incidence of under nutrition in a given population is usually measured by an estimate of the proportion of persons whose nutrition intake is below the prescribed level of nutritional requirement.

MEASUREMENT OF UNDERNUTRITION

Let us denote z_i as the minimum level of nutritional requirement for the i -th component of nutrition, z_i varies from person to person according to age, sex, level

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of activity etc. Suppose in a group there are n persons and y_{ij} is the nutritional intake of j -th person for the i -th component of nutrition. These intakes are arranged in an increasing order of their magnitude and presented in the following rectangular form:

$$\begin{array}{ccccccc} y_{11} & \leq & y_{12} & \leq & \dots & \leq & y_{1j} & \leq & \dots & \leq & y_{1m_1} & < z_i & \dots & \leq & y_{1n} \\ y_{21} & \leq & y_{22} & \leq & \dots & \leq & y_{2j} & \leq & \dots & \leq & y_{2m_2} & < z_r & \dots & \leq & y_{2n} \\ \vdots & & \vdots & & & & \vdots & & & & \vdots & & & & \vdots \\ y_{i1} & \leq & y_{i2} & \leq & \dots & \leq & y_{ij} & \leq & \dots & \leq & y_{im_i} & < z_i & \dots & \leq & y_{in} \\ \vdots & & \vdots & & & & \vdots & & & & \vdots & & & & \vdots \\ y_{k1} & \leq & y_{k2} & \leq & \dots & \leq & y_{kj} & \leq & \dots & \leq & y_{km_k} & < z_k & \dots & \leq & y_{kn} \end{array}$$

where $(m_1, m_2, \dots, m_k) \leq n$ are the number of persons below the prescribed level of nutritional value for k components of nutrition.

Let $P_i (= m_i)$ be the proportion of persons below z_i for the i -th component of nutrition. P_i can be considered as the simplest measure of under nutrition for the i -th component of nutrition. But it can be rejected on the basis of the following serious drawback

It ignores the amount by which the intake of undernourished persons falls short of the minimum prescribed level (z_i) for the i -th component of nutrition.

MEASURE OF UNDERNUTRITION OF AN INDIVIDUAL

An individual with intake less than the minimum prescribed level for the i -th component of nutrition is termed as undernourished for the i -th component. The extent by which its intake is less than its minimum prescribed level gives an indication of the extent of under nutrition for the i -th component. Thus a more satisfactory measure of under nutrition of an individual or person for the i -th component of nutrition would be

$$a_{ij} = 1 - \frac{y_{ij}}{z_i}, \quad i = 1, 2, \dots, k$$

zero or negative values of a_{ij} 's would indicate sufficiency of nutrition for the i -th component, a_{ij} 's may be termed as relative nutrition gap for the i -th component.

MEASURES OF UNDERNUTRITION OF A GROUP OF INDIVIDUALS

The simplest measure of under nutrition for i -th component of a group of individuals is the proportion of individuals who are undernourished for the i -th

Component. But it has been seen that this proportion is completely insensitive to the distribution of nutritional intake among the undernourished persons. Per capita nutritional intake for the i -th component may be a good measure of under nutrition for a household but it is not satisfactory for a group. This is because of a wide variation of per capita intake between households within a group (households in a village, town, State or country). Therefore, the per capita intake does not tell much about the actual nutritional intake. Even if the average intake is more than the requirement, it does not by any means ensure that nobody is undernourished.

If two groups have the same proportion of persons, a finer comparison of under nutrition for i -th component could be made by using some measure of central tendency of the measure a_i . Thus, if there are n persons in a group of which m_i are undernourished, the mean of the measure a_i for the m_i undernourished persons and take it as a measure of under nutrition of this group.

This single measure, however, does not seem proper for comparison of under nutrition of two groups for which the proportions of the undernourished persons are substantially different. For illustration, consider two groups G_1 and G_2 . In G_1 , proportion of the undernourished persons is 0.5 and the average value of a_i amongst them is 0.2. In G_2 , the proportion of undernourished persons is 0.1 but the average value of a_i amongst them is 0.8. It would only show that the group G_2 is more undernourished. But overall proportion of these worse-off persons is very small. It would be wrong to consider G_2 to be more undernourished. Thus, the simple arithmetic mean of a_i measures of undernourished persons is an unsatisfactory measure of under nutrition for a group.

The following alternative is suggested:

Take the a_i measure of all non-undernourished for i -th component persons as zero and then take the mean of a_i measures of all the persons in the group (both undernourished and non-undernourished persons). This is the same as the product of the previously suggested measure with the proportion of undernourished in the group. The simplest way to calculate it would be

$$U_i = P_i - \frac{\sum_{j=1}^n y_{ij}}{nz_i}$$

where $y_{ij}^* = y_{ij}$ if $y_{ij} < z_i$

$y_{ij}^* = z_i$ if $y_{ij} \geq z_i$

The same expression of U_i may also be written as:

$$U_i = P_i \left(1 - \frac{\bar{y}_{u_i}}{z_i} \right)$$

or

$$U_i = \frac{1}{n} \sum_{j=1}^{m_i} \left(1 - \frac{y_{ij}}{z_i} \right)$$

where $\bar{y}_{u_i} = \frac{1}{m_i} \sum_{j=1}^{m_i} y_{ij}$

average nutritional intakes of undernourished persons for the i -th component. The overall measure of under nutrition (U) may be the weighed or simple mean of all U_i 's.

The measure of under nutrition (U) is better than the usually used proportion of undernourished persons because it is not concerned merely with the number of persons below the minimum required level of intake but also with the amount by which the intake of undernourished persons fall short of the specified minimum requirement.

The measure (U) gives equal importance to all relative nutrition gap irrespective of its size. But for the more sensitive measurement, the larger relative nutrition gap should be given larger weights. By applying this theory it will further modify this measure. The following general form of the measure of under nutrition is considered:

$$S_i = f(m_i, n) \sum_{j=1}^{m_i} a_{ij} w_{ij} \quad \dots (2.2.1)$$

where w_{ij} = weight corresponding to the relative nutrition gap of the j -th individual of the i -th component of nutrition. $f(m, n)$ is a function dependent on m and n .

It is defined w_{ij} as directly proportional to

$$a_{ij} = \left(1 - \frac{y_{ij}}{z_i} \right), \text{ that is,}$$

$$w_{ij} \propto \left(1 - \frac{y_{ij}}{z_i} \right)$$

$$w_{ij} = k \left(1 - \frac{y_{ij}}{z_i}\right) \quad \dots (2.2.)$$

$$\sum_{j=1}^{m_i} w_{ij} = k \sum_{j=1}^{m_i} \left(1 - \frac{y_{ij}}{z_i}\right)$$

It is assumed that the sum of weights is equal to unity. This gives m.

$$1 = k \sum_{j=1}^{m_i} \left(1 - \frac{y_{ij}}{z_i}\right)$$

$$\text{or } k = \frac{1}{\sum_{j=1}^{m_i} \left(1 - \frac{y_{ij}}{z_i}\right)} \quad \dots (2.2.3)$$

From (2.2.2) and (2.2.3), we have

$$w_{ij} = \frac{\left(1 - \frac{y_{ij}}{z_i}\right)}{\sum_{j=1}^{m_i} \left(1 - \frac{y_{ij}}{z_i}\right)} \quad \dots (2.2.4)$$

Next in the extreme case it is assumed that if all undernourished persons have no nutritional intake, the measure equals the proportion¹. So, from (2.2.1), we have

$$\frac{m_i}{n} = f(m_i, n) \quad \dots (2.2.5)$$

From (2.2.1), (2.2.4) and (2.2.5), the following expression of measure of undernutrition for the i-th component of nutrition is obtained:

$$s_i = \frac{m_i}{n} \frac{\sum_{j=1}^{m_i} \left(1 - \frac{y_{ij}}{z_i}\right)^2}{\sum_{j=1}^{m_i} \left(1 - \frac{y_{ij}}{z_i}\right)}$$

The combination of all S_i , $i=1,2,\dots,k$ will construct an overall statistical measure of undernutrition. In that case, the following simple measure of under nutrition may be considered:

$$S = \sum_{i=1}^k S_i v_i$$

where v_i is the weight attached to the measure of under nutrition for the i -th component. The weights should be determined according to the importance of the components of nutrition. But in the simplest case, equal importance for all components may be considered. In this case we assign equal weights to each component and an overall measure of under nutrition will be the simple arithmetic mean of all S_i .

संख्यात्मक

इस लेख के माध्यम से अल्पपोषण के बारे में सांख्यिकीय-माप निर्मित करने का एक प्रयास किया गया है। प्रारम्भ में पोषण के केवल एक पक्ष के संदर्भ में अल्पपोषण का सांख्यिकीय माप सुझाया गया है। तत्पश्चात विभिन्न घटकों के लिए अल्प पोषण के अलग-अलग मापों को संयुक्त करके एक व्यापक सांख्यिकीय माप तैयार किया गया है।

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EFFECT OF EDUCATION, ECONOMIC STATUS AND OCCUPATION ON FERTILITY

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ABSTRACT

In this paper an attempt has been made to study the effect of occupation, education and economic status of couples on fertility. Data have been collected from 386 couples of different socio-economic status from Dehra Dun City (Uttar Pradesh) during 1981-82 using a specially designed schedule. Results after analysis revealed that education up to graduate level for men and high school level for women is effective in increasing age at marriage which in turn reduces fertility. Husband's/family income plays a positive role for reduction in fertility. Occupation of husband is also a determining factor for control of fertility.

Growth of population is governed by many factors, of which fertility is the most important. Fertility in turn is affected by socio-biological factors. Many investigators have noted that the number of children born by a women in her life time is influenced by various social and cultural factors^{2,3}. Almost all studies have observed an inverse relationship between the educational level and fertility of the couple^{4,5,6,7,8,9,10,11,12}. The only exception is the study by Harman that reported a positive relationship between female education and fertility in the Philippines³. In India, there are several reports on fertility and its relationship with socio-economic conditions of the couples^{4,5,6,17,8}. Husband's occupation is no less an important social variable to influence the fertility^{9,20}.

MATERIAL AND METHODS

The sample consists of 386 couples of different socio-economic and ethnic origin from Dehra Dun City (Uttar Pradesh). Data regarding outcome of each pregnancy, age at marriage, educational status of the spouses and income of the family were collected during 1981 -82 by means of personal interview with women. The data thus collected later cross checked with their husbands and/or with elderly women of the family.

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RESULTS AND DISCUSSION

The proportion of individuals marrying at younger ages gradually declines with the increase in their educational status as shown in Table 1. The women educated up to high school standard married significantly later than the women who are illiterate ($t^* 2.5025$) and those educated up to graduate level married in average, 3.84 years later than the illiterate women. Likewise, males educated up to graduate level reported to have married at later ages than their illiterate counterparts ($t= 2.0013$). Thus education up to graduate level for men and high school level for women is effective to increase the age at marriage. The fertility of women in each group is measured in terms of average number of live births. The mean number of live births belonging to illiterate mothers is 2.75 ± 0.16 and is found to decrease significantly with the increase in the educational level up to graduate as given in Table 2. Mean number of live births categorized according to father's educational standard also show a similar trend of decrease. The decreasing trend in the mean number of live births for women as discussed earlier, is most prominent when educational status of women raised from junior high school to high school level. Thus, for women education up to high school level can be an important factor to reduce the fertility. This bears out the observation that "differential fertility by educational level does exist in India only when females are educated upto matriculation level or more"²¹.

Thus the study corroborates the findings that age at marriage and educational level of spouses play an important role for reducing fertility. It was also observed that the increase in educational level tends to increase the age at marriage and thus reducing the chance of exposure to fertility²². The surveys conducted in Kanpur, Madras, Calcutta, Lucknow and Delhi have also revealed that females who marry late have less number of children than those who marry early^{23, 24, 25, 26, 27, 35}.

The differential fertility by education level does exist in central India is confirmed by the authors of several studies^{28, 29, 30}. Another factor, likely to be related to fertility is the economic condition. Economic status of couples has been grouped into four broad categories on the basis of monthly per capita income as shown in Table 3. Mean number of live births per couple is highest (3.89 ± 0.34) in the lowest per capita income group; and it gradually decreases through increasing income categories to 1.43 in the highest per capita income group. Though statistically significant differences have been observed in the mean number of live births between the following categories (i) 1 and 2 ($t = 3.4712$); and (ii) 2 and 3 ($t = 7.2397$). Thus fertility is inversely associated with the socio-economic status of the couple in the present series. It was observed that in central India fertility tends to decline with an increase in per capita monthly income²⁸. Studies conducted in Kanpur, Bombay and Lucknow did not suggest any such consistent trend of decreasing fertility^{23, 30, 32}. 'Little relationship' between the fertility and husband's income has also been observed in other studies^{32, 33}.

TABLE 1
AVERAGE AGE AT MARRIAGE ACCORDING TO EDUCATIONAL STATUS OF THE
SPOUSES

s. No.	Educational Status	Husband			Wife		
		No.	Age at marriage Mean $\pm$ S.E.	't' Value	No.	Age at marriage Mean $\pm$ S.E.	't' Value
1.	Illiterate	37	21.62 $\pm$ 0.84	1.30 0.2 > p > 0.1 (1x2)	115	16.67 $\pm$ 0.46	1.72 0.1 > P > 0.05 (1x2)
2.	Junior High School	99	23.22 $\pm$ 0.47	0.16 0.9 > P > 0.8 (2x3)	99	17.42 $\pm$ 0.20	2.79 0.01 > P > 0.001 (2x3)
3.	High School	164	23.23 $\pm$ 0.42	2.49 0.02 > P > 0.01 (3x4)	110	18.97 $\pm$ 0.39	2.36 0.02 > P > 0.01 (3x4)
4.	Graduate	55	24.85 $\pm$ 0.29	1.97 0.05 > P > 0.02 (4x5)	48	20.51 $\pm$ 0.34	1.31 0.2 > P > 0.1 (4x5)
5.	Post-graduate and above	31	26.06 $\pm$ 0.47		14	22.00 $\pm$ 0.86	

Probability at 5% level

TABLE 2
LIVE BIRTHS ACCORDING TO EDUCATIONAL STATUS OF THE SPOUSES

s. No.	Educational Status	Husband			Wife		
		No.	Live births per couple Mean $\pm$ S.E.	't' Value	No.	Live births per couple Mean $\pm$ S.E.	't' Value
1.	Illiterate	37	2.88 $\pm$ 0.28	1.51 0.2 > p > 0.1 (1x2)	115	2.75 $\pm$ 0.16	2.32 0.05 > p > 0.02 (1x2)
2.	Junior High School	99	2.70 $\pm$ 0.02	6.98 p < 0.001 (2x3)	99	2.49 $\pm$ 0.15	4.04 p < 0.001 (2x3)
3.	High School	164	2.20 $\pm$ 0.10	2.37 0.02 > P > 0.01 (3x4)	110	1.99 $\pm$ 0.09	3.12 0.01 > p > 0.001 (,3x4)
4.	Graduate	55	2.00 $\pm$ 0.16	1.38 0.2 > p > 0.01 (4x5)	48	1.72 $\pm$ 0.14	1.08 0.3 > P > 0.2 (4x5)
5.	Post-graduate	31	1.80 $\pm$ 0.28		14	1.65 $\pm$ 0.20	-
Probability at 5% level							

TABLE 3
LIVE BIRTHS IN VARIOUS PER CAPITA INCOME GROUPS

S. No.	Per capita monthly income group (Rs.)	No.	Live births per couple Mean $\pm$ S.E.	't' Value
1.	< 50	28	3.89 $\pm$ 0.34	3.47; p < 0.001 (1x2)
2.	51 - 200	251	2.42 $\pm$ 0.08	7.24; P < 0.001 (2x3)
3.	201 - 350	75	1.66 $\pm$ 0.09	1.27; 0.3 > p > 0.2 (3x4)
4.	350 +	32	1.43 $\pm$ 0.12	

Probability at 5% level

The third important social variable is the occupation of husband, its effect on fertility has been appreciable, although sometimes in conjunction with literacy and economic status. The occupation of husbands is grouped into four different broad categories as given in Table 4. The mean number of live births is the highest among the cultivators (2.9010.26). This value gradually reduces through laborer and business class and lowest mean number of live births (1.86± 0.09) among the service class. Significant differences in the mean number of live births have been observed between all occupational categories of husbands except cultivators and laborers. Higher level of education, late age at marriage and better knowledge of measures for birth control among the service class have helped them to plan their families and restrict the number of births. Other studies conducted on the subject suggested that the service class and professionals have lower fertility as compared to the laborers and cultivators^{26, 30, 25, 28}. But the reverse situation has been observed in Egypt; where the fertility of women married to top collar group is higher than those wives of farmers, miners and craftsmen³⁴.

The study highlights the inverse relationship between economic status of couple and fertility. Differential fertility based on education and occupation has also been observed. Higher educational and economic status of couples gives rise to an increase in mean age at marriage thus reducing the reproductive life span of the couples *vis-a-vis* fertility. Population growth can be controlled up to certain extent if men and women are educated at least upto graduate and high school level.

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इस लेख के माध्यम से जननदर पर दम्पतियों की व्यावसायिक, शैक्षिक, तथा आर्थिक स्थिति से पड़ने वाले प्रभावों का अध्ययन करने का एक प्रयास किया गया है इस अध्ययन के अन्तर्गत उत्तर प्रदेश राज्य के देहरादून नगर में अलग-अलग सामाजिक-आर्थिक स्तर के 386 दम्पतियों से आंकड़े एकत्र किए गए थे। आंकड़े एकत्र करने के लिए विशेष रूप से तैयार की गई अनुसूची प्रयोग में लाई गई थी। अध्ययन के अन्तर्गत रखे गए दम्पतियों में से पति-पत्नी-प्रत्येक की शैक्षिक, व्यावसायिक तथा आर्थिक स्थिति के बारे में गहराई से सूचनाएं एकत्र की गई थी। आंकड़ों के विश्लेषण से प्राप्त परिणामों से पता चलता है कि पुरुषों के लिए कि पुरुषों के लिए स्नातक स्तर की शिक्षा तथा महिलाओं के लिए हाई स्कूल स्तर की शिक्षा का होना विवाह-आयु में बढ़ोत्तरी के लिए प्रभावकारी हो सकता है तथा इसके परिणाम स्वरूप जननदर में भी कमी आ सकती है। जननदर को कम करने में पति/परिवार की आय भी सकारात्मक भूमिका प्रदान करती है। जननदर पर नियंत्रण के लिए पति का व्यवसाय भी एक निश्चायक पक्ष के रूप में है।

TABLE 4
LIVE BIRTHS ACCORDING TO OCCUPATION OF HUSBAND

S. No.	Occupation of husband	No.	Live births per couple Mean ♦ S.E.	't' Value
1.	Cultivator	21	2.90 + 0.26	0.68; p > 0.9 (1x2) 3.33; p < 0.001,, (1x3) 3.70; p < 0.001 (1x4)
2.	Labourer	20	2.86 + 0.29	2.98; 0.01 > p > 0.001 (2x3) 3.29; 0.01 > p > 0.001 (2x4)
3.	Business	80	1.96 + 0.13	2.00; 0.05 > p > 0.02 (3x4)
4.	Service	265	1.86 + 0.09	

Probability at 5% level

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