

ORGANISATION OF HEALTH SERVICES IN NIGERIA

P. C. Osuhor*

ABSTRACT

Nigerian indigenous medical practice is much older than the modern health services which were introduced into what is now known as Nigeria about 500 years ago, through the trans Sahara trade routes and later on, by the European traders, explorers, colonial military and civilian administrators and lastly the Missionaries.

Only 20 per cent of the population has medical and health facilities in Nigeria. It is, therefore, envisaged to increase this coverage to 40 per cent by 1980 through the Basic Health Services Programme as set out in the Third National Development Plan (1975-1980).

The history of medical practice in Nigeria goes back much further than is generally realized. Traditional medicine has existed for a long time and has provided the earliest known form of indigenous medical care. The practitioners included the *Wombais* of the Hausas, the *Gozans* of the Nupes, the *Adehunses* of the Yorubas and the *Dibias* of the Ibos, These traditional healers are still with us even after the introduction of Western medical practice at about 500 BC into what we now know as Nigeria. These medical practices must have been influenced in certain ways especially by the various Islamic and Arabic cultures in the 13th Century AD through the Sahara trade routes to Northern Nigeria.

**Department of Community Medicine, Ahmadu Bello University, Zaria, Nigeria.*

The Portuguese traders in the 15th Century and the slave traders in the 16th, brought with them licensed physicians to care primarily for their staff both on board the ships and in their various trading stations as well as the slaves exported to Europe and the Americas. Ship Surgeons and medically qualified Botanists-cum-Explorers had landed in various Nigerian ports on temporary visits but malaria, dysentery and yellow fever slowed them down from fast inland penetrations. Mungo Park (1771-1806), a Scottish medical doctor discovered the River Niger in 1796. William B. Baikie (1825-1864), another medical man enhanced expeditions by introducing the successful prophylactic use of quinine in malarial fevers. A Colonial Governor, Sir William Mac-Gregor (1846-1919) was also a medical doctor who enormously improved the sanitary services and conditions of Lagos, now the Federal Capital city of Nigeria.

Early Non-military Colonial Administrative Period

The Missionaries who followed the explorers and military expedition forces were the first to establish organized medical care in West Africa. By the 1850's, they had established hospitals in Lagos and Abeokuta in Southern Nigeria. In the 1870's Naval and Military hospitals followed while the first civilian hospital was probably built at Asaba (now in Bendel State, Southern Nigeria) in 1888. Government effort was ten years later in 1898 in Calabar again in Southern Nigeria.

Other non-medically qualified Missionaries influenced medical care systems in Nigeria, especially in the South. Some of them included David Hinderer (Anglican), Hope Wardell (Scottish Presbyterian), Samuel Bill (Irish Presbyterian), Bishop Shanahan (Catholic) and Thomas Bower (American Baptist).

Northern Nigeria with its more conservative culture absorbed Western medicine slower than Southern Nigeria; but by the late 19th Century, Missionary medical services broke through the Moslem influence and the natural reserve of the people.

It could be seen that the Nigerian Government medical and health services developed mainly from the British Army and Colonial medical services. Medical, health and sanitary

coverage were mainly for the Army and the Colonial Service Officers and personnel. Later, Nigerian senior Government Officers were included in the health scheme, and much later on, their families and again lastly the more junior Nigerian Government staff and their families. It was the Missionary health systems that provided the bulk of the health services in many parts of Nigeria, both urban and rural. Indeed, in some Nigerian States, they still provide about 40 per cent of the total health facilities, while in the rural areas there may be to a certain degree only available modern, health facility.

The following periods will help to illustrate the rapid advances in modern medical expansion in Nigeria.

Before 1952: There was a unified health service in Nigeria. Due to the large size, there was uneven distribution of health personnel and facilities throughout the country. However, by 1952, Nigeria was broken up into three Regions - (Eastern, Western and Northern) with a measure of self-government for each Region.

1952-1966: In 1952, Regionalization of health and other Government services occurred." Each Region formulated and implemented their health policies and programmes while the Federal Government was responsible for international liaison in health matters, licensing of health workers and standardization of drug control.

1967 onwards: In 1967, twelve States were created in Nigeria out of the three former Regions. Each State therefore, took over the Regional health matters on ten-year plan basis. These plans were based on the Harkness - Walker, Ten Year Plan 1946-1956-1966. Both Harkness and Walker were then Director and Deputy Director of the then Nigerian Medical Services. They recognized that "permanent improvement in a nation's health cannot be secured by clinical medicine alone; there must be a steady advance in all factors contributing to a healthy life - good water supplies, housing, sanitation, nutrition and working conditions." The Fundamental principles enumerated in the Harkness - Walker Plan were:

- 1 . Provision of adequate pure water supply for everyone.
- 2 . Progressive building up of environmental hygiene.

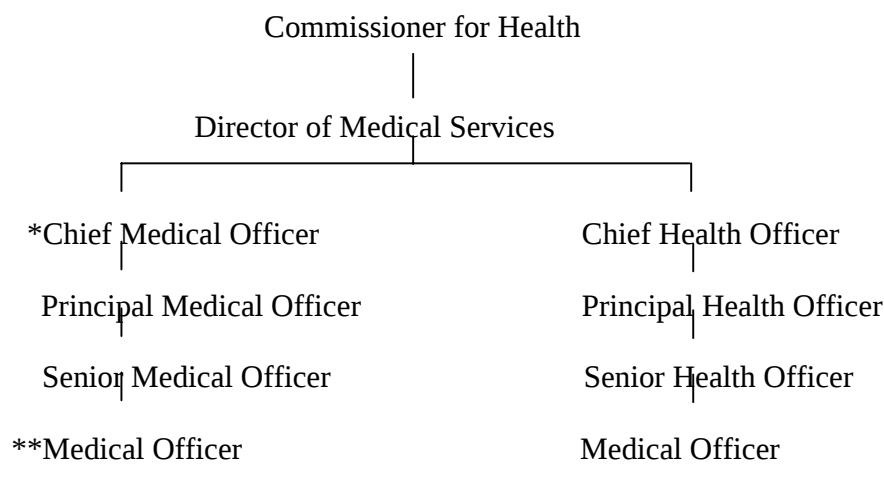
3. Expansion of hospital, maternity, child welfare and dispensary services, coupled with a vigorous campaign for preventive medicine in the field.

These three points still form the basis of health programmes in Nigeria today.

Present Organisation and Administration

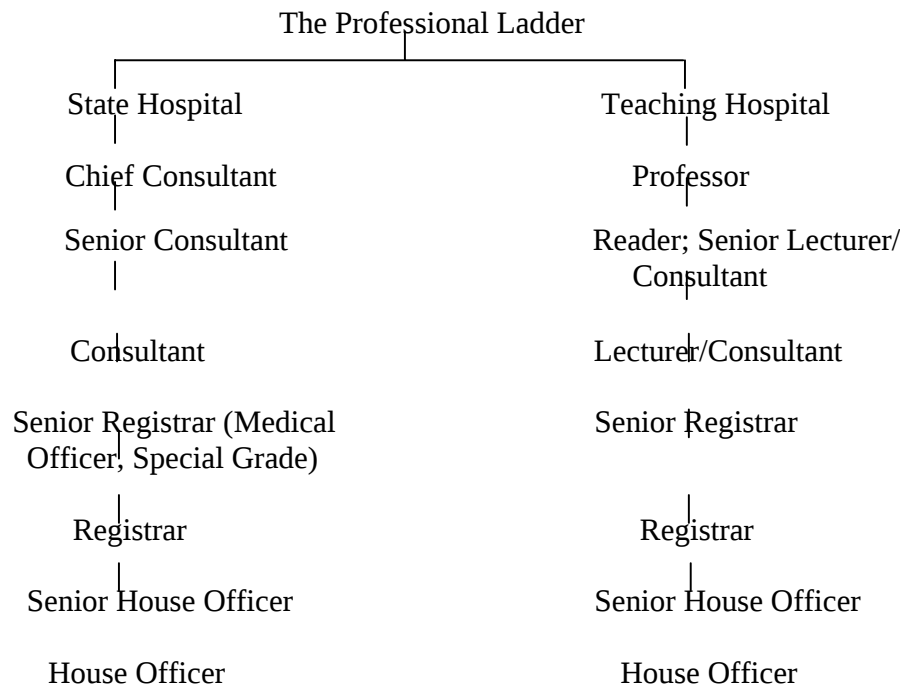
The Federal Government still has its responsibilities and functions as earlier enumerated. In addition, it has taken over the financing of all the medical schools and their Teaching Hospitals in the country as well as some research institutions, for example, The Nigerian Medical Research Council (NMRC) and the Nigerian Institute for Tripanasomiasis Research (NITR).

At both the Federal and State levels there are medical professional administrative (medical and health) and nonmedical administrative wings of ministries of health. The Commissioner for Health is at the apex of the ladder. The Director of medical services who may or may not be a permanent secretary is responsible to the Commissioner for Health on all health matters. The Chief Health Officer, Chief Medical Officer, Chief Nursing Officer, Chief Dental Officer, Chief Pharmacist, Chief Technologist, Chief Dietitian and Chief Radiographer are all responsible to the Director.



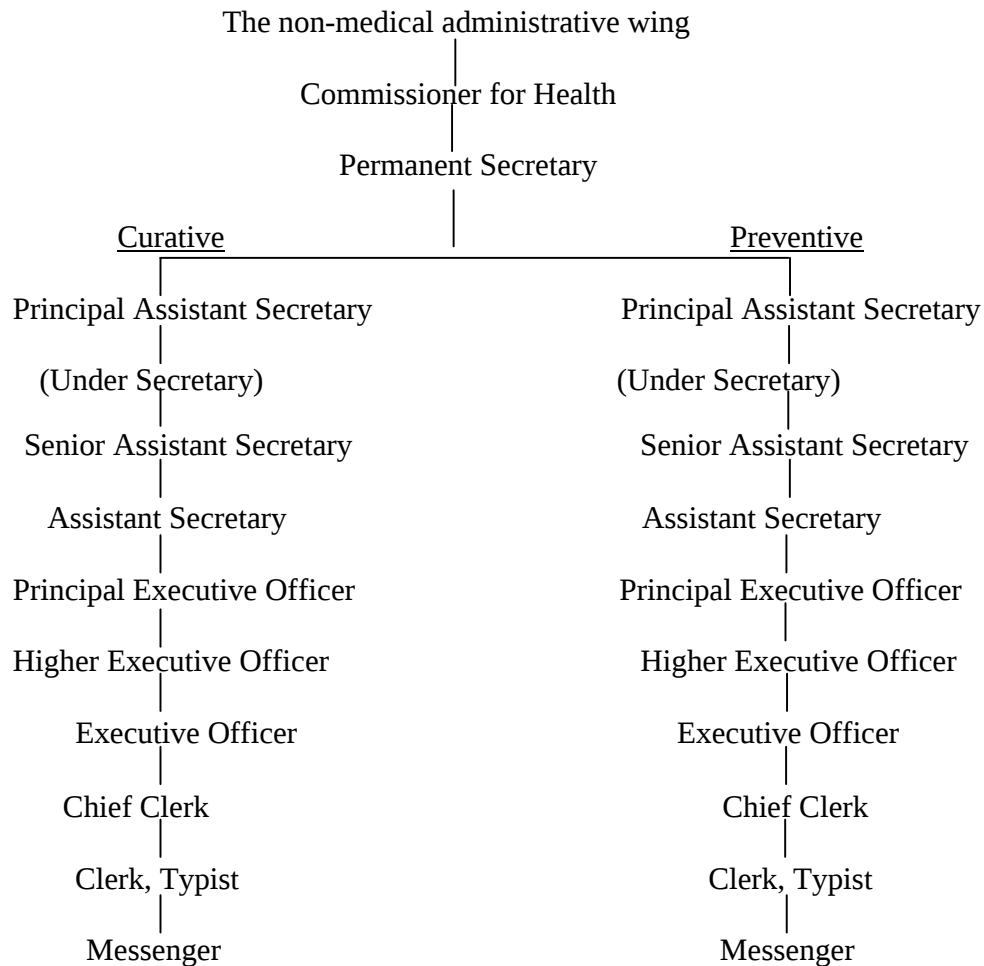
**For dental, pharmacy, nursing, medical technology, and radiography, the professional ladder is the same.*

***Due to shortage of personnel, a medical officer in a District general hospital also acts as the medical officer of health for the District.*



Operating side by side with the Ministry of Health in most States is the State Hospital Management Board (SHMB). This Board has a Chairman and the Chief Medical Officer of Health is usually the Secretary to the Board. The Board is responsible for the planning and implementation of health activities for a well defined medical area which usually comprises of three or more districts of a State, It is hoped that medical practice will be brought nearer to the population with this decentralized administration of a group of hospitals.

The functions of the SHMB are planning, establishment of standards, evaluation, provision of advisory services, technical assistance, transport to intermediate and local levels of health services, budgetary provision for the State health services, collection and analysis of health statistics, liaison with other Government Ministries, commercial, industrial and non-Government agencies; procurement, storage and distribution of equipment, supplies and drugs; staff recruitment and training and laboratory services.



Medical Care Systems

The following medical care systems exist in Nigeria.

1. Government (both Federal and State)
2. Local Authority
3. Voluntary Agencies
4. Armed Forces
5. Private Practitioners (doctors, nurses, midwives)
6. Industries
7. The medical schools and their teaching hospitals.

The author had discussed these systems elsewhere.

Basic Health Services Programme in the Third National Development Plan (1975-1980)

The Programme envisages a network of coordinated basic health service structure, staffed by competent health personnel at appropriate levels. Professional supervision of staff will be emphasized at these various levels of health care delivery systems. Services, basic to the needs of the population will be provided with the available resources at any given time. The training of paramedical and auxiliaries plus the control of communicable and nutritional diseases, environmental sanitation and family health were emphasized. Again, the programme will substantially provide the infrastructure necessary to achieve the Federal Government's policies and objectives on correcting and reducing the imbalance of the provision of health services between the rural and the urban areas. These are:

Aims

1. Total coverage of the population with comprehensive and curative service by stages.
2. Application of appropriate intermediate health technology based on the nature of prevailing diseases, the age structure and rural domicile of the population.
3. Innovations in health care system which provide the infrastructure, and bridge the wide gaps in the health sector during the next plan period.
4. Fitting health centers and clinics into rural health, rural environmental and family health works.

Objectives

1. To initiate the provision of adequate and effective health facilities and care for the entire population. (At present, about 25 per cent of the population receive some form of health care.)
2. To correct imbalances in the location and distribution of health institutions.
3. To correct imbalances between preventive and curative medicine.

- 4 . To provide the infrastructure for all preventive health programmes such as control of communicable diseases, family health, environmental health, nutrition and others.
- 5 . To establish a health care system best adapted to the local conditions and the level of health technology.

The Health Clinic: This is the first level of the basic health service especially in the rural areas. It should cater for a population of 2,000, and should have a specific structure and resident staff. Other health personnel will travel to the health clinic on specific days of the week or month to provide additional health services to the population.

Basically, the clinic should provide:

1. Out-patient medical treatment services.
2. Control of communicable diseases by immunization and treatment.
3. Family health including family planning.
4. Nutrition service.
5. School health service.
6. Environmental health inspection and activities.
7. Health education.

The health clinics will replace the dispensaries which will be phased out and the staff retrained as far as possible.

The facilities will consist of:

1. Out-patient clinic: General
 Family Health
2. Casualty service: Dressing room
 Delivery room
3. Health office

The Mobile Clinic: It is recognized that in the rural areas, even coverage of the population is not possible by static facilities alone. Due to socio-cultural factors, health activities will have to be taken nearer to the people. The mobile clinic consisting of a land rover and a caravan, will deliver health services, on established days to a population of 10,000.

The Health Centre: Ordinary Health Centers will perform all the functions of health - education, promotion, protection, restoration and rehabilitation. The following services will be additional to those provided by the health clinics:

- | | |
|----------------------------------|---------------------------|
| 1. Supervision of health clinics | - Dental health |
| 2. Mass campaign | - Referral services |
| 3. Public Health Nursing | - In-patient medical care |

Each health centre will have the following facilities:

- | | |
|---------------------------|--|
| 1. Out—patient clinics: | General
Family Health
Dental |
| 2. Casualty Clinic | |
| 3. In-patient facilities; | Delivery room
4 Maternity beds
6 C o t s
2 Emergency beds |
| 4. Portable X-ray | |
| 5. Small surgical theatre | |
| 6. Laboratory | |
| 7. Health Office | |
| 8. Administrative Office | |

The Health Centre is the simplest structure at the periphery to be manned by resident health staff carrying out all basic health functions.

The population to be covered by the Health Centre is 10,000.

The Comprehensive Health Centre: This infrastructure has been defined as an established comprehensive structure in an urban or rural area which carries out the basic health functions of a health centre with a degree of sophistication and is responsible for the supervision of a number of satellite health centers and clinics (static or mobile).

Each Comprehensive Health Centre will have:

- | | |
|---------------------------|--|
| 1. Out-patient Clinics: | General
Family Health Dental |
| 2. Casualty Clinic | |
| 3. In-patient facilities: | Delivery Room
10 Beds for Maternity 10 Beds for emergency 10
Children Cots Surgical Theatre X-ray Laboratory
Health Office Administrative Additional facilities |

The Basic Health Unit: A Basic Health Unit is envisaged to serve a target population of approximately 50,000 within an administrative Division or District. The structure of the Unit comprises of one Comprehensive Health Centre,

Four Health Centers

Five Mobile Clinics

Twenty Health Clinics

Thus the total number of beds in a Basic Health Unit for a 50,000 population is 78 (Comprehensive Health Centre has 30 beds while each of the four Health Centers has 12 beds).

By this basic Health Services concept, about 40 per cent of the population will have medical coverage by 1980. After 1980, the progress is thought to be very rapid when the basic infrastructures must have been established.

Conclusion

The doctor/population ratio in Nigeria is about 1:23,000. The World Health Organization (WHO) recommends 1:10,000. Therefore, the Nigerian Government emphasizes medical education, with about 1,729 Nigerians in the six Nigerian medical schools plus about 282 abroad. Thus, it is hoped that by 1980, the doctor/population ratio will be 1:20,000. It is also hoped to achieve this target by each medical school producing about 200 doctors annually and also by the establishment of four more medical schools in the country, bringing the total number of medical schools to ten by 1980.

There are tremendous dynamic training programmes for other health personnel, either by establishing new schools or by expanding the existing ones.

The author would, however, emphasize that the muted idea of compulsory National Registration of births and deaths should be launched immediately so that more accurate planning in all spheres including medical matters can be achieved.

The author's second priority is a massive national programme to tackle our environmental health problems. Already, other national programmes, for example, Operation Feed the Nation (OFN), Universal Primary Education (UPE), housing, rural electrification, and water supply schemes are bound to show positive health impacts on the population in the immediate future.

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RURAL CHILD NUTRITION

Some Areal Comparisons**

Mandakini Khandekar*

ABSTRACT

The data in this study bring out some interesting differences between agricultural, coastal and tribal villages. The findings lead to the question: why is it that while mothers in the coastal villages show a relatively better understanding of child nutrition, yet the children in the agricultural villages have relatively better nutrition status?

The service area of the Palghar Project consisted of three types of villages - agricultural, coastal and tribal. An agricultural village generally has more farmers than those engaged in other occupations. A coastal village is characterized by its fishing activity though some farmers are also found there. A tribal village, especially in a district like Thane, has a large proportion of population belonging to the aboriginal tribes who mostly go to the forests to collect what are usually called "forest produce." Some cultivation is also carried out. Thus, despite a normal range of variety, each type of village is distinct from others in terms of the occupations followed by its inhabitants.

A question arose: "What is the implication of the type of village for child nutrition services? In what ways, if at all, do the three types of villages differ from each other?" Some interesting materials culled from the research studies are presented in this paper. The data are documented in a style which is intended to focus attention on the simi-

**Head of the Unit for Child and Youth Research, Tata Institute of Social Sciences, Bombay.*

**This is the third paper in the series on the Palghar Project. Earlier two instalments have appeared in the erstwhile NIHA Bulletin Vol. 10, No. 2 and 3, dealing among others the background and methodology of this Project.*

larities and differences among the three types of villages. They are taken mostly from the 1974 round of investigations.

Preferred Age for Starting Supplements

Here, we consider only those who indicated very late ages for starting liquid and solid supplements. It has been noted that by and large, respondents had indicated late and very late ages for giving anything besides milk to young children. In the case of liquids, all ages after and including seven months were considered very late. The corresponding cut-off point for solids was 13 months.

Table 1 shows that in the case of both liquid and solid supplements, the respondents in the coastal village's record relatively lower percentages for the very late ages. So, we can surmise that it would be relatively easier to convince people in coastal villages about the utility of giving liquid and solid supplements to children at the right time. Agricultural villages would come next in order and the tribal villages seem to be the places where the change agents would have to face many difficulties. The assumption here is that the higher the age indicated for giving food supplements to children, the more difficult the task of a child nutrition worker in persuading people to change over to the right ages for starting the supplements.

Since, we have given the two sets of data for liquid and solid supplements in apparent juxtaposition, we may clarify

TABLE I
AREAWISE PERCENTAGES OF RESPONDENTS INDICATING "VERY LATE" AGES FOR GIVING
LIQUID AND SOLID SUPPLEMENTS TO YOUNG CHILDREN

Village	Type of Supplements	Liquid Supplements	Solid
	Agricultural	32.0	14.4
	Coastal	29.1	11.4
	Tribal	34.0	16.0

that the right ages for them are naturally different. At the same time, it does seem that persuading mothers to start liquid supplements at the right time would be relatively more difficult than in the case of solid supplements. Why should it be so? It may be that giving anything besides milk to young children makes these mothers more apprehensive.

In order to gain more insights into the problem, we turned to the answers given by the Type A respondents, *i.e.* those included in the 1972 Study and 1974 Re-Study. Their responses at these two points of time are recorded in Table 2.

When we look to the differences between the responses in 1972 and 1974 in the case of liquids, the pattern conforms to the findings of Table 1. It is clear that in the coastal villages, a larger number of respondents had changed their views: the difference in terms of the percentage points is very big in their case. In 1972 as many as 82.2 per cent of the mothers had indicated very large ages; in 1974 the percentage had sharply declined to only 22.2 per cent. The agricultural villages show a less spectacular result (45.0 percentage points) but it is better than that of the tribal villages (39.0 percentage points).

So far as the solid supplements are concerned we see that the coastal villages show a small negative change (-2.2 percentage points) but this has to be viewed in the light of

TABLE 2
AREAWISE PERCENTAGES IN 1972 AND 1974 OF TYPE A RESPONDENTS INDICATING "VERY LATE" AGES FOR GIVING LIQUID AND SOLID SUPPLEMENTS TO YOUNG CHILDREN

Type of villages	Respondents indicating "very late" ages for:					
	Liquid supplements			Solid supplements		
	1972 %	1974 %	Difference Percentage Points	1972 %	1974 %	Difference Percentage Points
Agricultural	84.1	39.1	45.0	36.2	14.5	21.7
Coastal	82.2	22.2	60.0	8.9	11.1	-2.2
Tribal	79.8	40.8	39.0	33.3	20.6	11.7

relatively very low 1972 and 1974 percentages, and then, the negative change losses its significance. The agricultural villages score over tribal villages (21.7 as against 11.7 percentage points).

We may draw attention to a noteworthy feature of the Type A respondents in so far as the two questions under consideration are concerned. For Table 1, all the respondents in 1974 were taken: some of them had not been included in the 1972 study. Type A respondents were in the samples for both 1972 and 1974 rounds. We observe that there is a close resemblance between the pattern of answers by the overall 1974 sample as evidenced in Table 1 and the 1974 responses of Type A respondents mentioned in Table 2. In other words, in the matter of starting liquid and solid supplements, Type A respondents can be taken as being broadly representative of the bigger 1974 sample. The regional pattern as seen in Table 2 can, therefore, be accepted so far as changes in people's opinions over time are concerned.

Besides the two overall questions for the broad categories of liquid and solid supplements, we have data on five specific items. Once again, we consider only those who mentioned very late ages for starting the selected items.

From Table 3, we find that the respondents in the coastal villages score over others by registering lower percentages for the less desired category of answers. What is interesting is that the respondents in the tribal areas show better results in respect of three items, viz, , rice, eggs and

TABLE 3
AREAWISE PERCENTAGES OF RESPONDENTS INDICATING "VERY LATE" AGES FOR FIRST GIVING FIVE
SELECTED ITEMS

Type of village	Dal water	Rice kanji	Rice	Eggs	Banana
Agricultural	21.6	22.7	56.7	81.4	80.4
Coastal	10.1	6.3	13.9	16.5	36.7
Tribal	36.0	42.1	52.7	66.8	70.5

banana, than their counterparts in agricultural villages. At the same time, we must stress that the differences between the latter two types of villages is one of degree rather than of kind.

The above questions were in respect of normal children. We had also asked a test question to assess respondents' understanding of the diet for only somewhat sick children. The percentages of respondents indicating special diet when a child is suffering from ordinary fever cough and cold are an indication of the amount of nutrition education which needs to be given by a child nutrition worker. The data gathered by us show that such work will be relatively less in agricultural areas if, ordinary fever is considered and in tribal areas if, cough and cold are considered. The percentages of respondents who indicated special diet for ordinary fever were 2.1, 11.4 and 4.4 in agricultural, coastal and tribal villages, respectively and 12.4, 10.1 and 5.1 respectively in the case of cough and cold. From our general understanding of the life situations in the tribal villages, it can be said that this particular point is closely related to the compulsions of the circumstances prevailing there and, given the tenor of hardy tribal life, parents do not have much time to pay heed to minor setbacks in health whether their own or of their children. Whatever may be the reasons for such a result, a child nutrition worker will have to ensure that the advantages of the desirable practice which is an unintended outcome of other factors in the social situation are not lost. To a lesser degree, the same arguments can be put forward in the case of the other two types of villages. However, it is evident that the advantages are less pronounced in coastal villages.

Area wise Summary

On the basis of the data presented so far, let us see how the three types of villages can be placed in relation to each other. A score of 2 can be assigned to the type which shows the best result, 1 to the next best and 0 to the type which lags behind the other two. The Table 4 gives the tally for each type of villages.

We see that the respondents in the coastal villages showed a relatively better understanding of the requirements of child nutrition. The agricultural villages came next and

as is only to be expected, the tribal villages show, by and large, a poor result.

Some Practices

So far, we considered questions which had elements of understanding and opinion in them. We had also asked few factual questions. We will take up two of them here. Both the items of data pertain to individual children.

We wanted to find out how many, if at all, children aged 2-5 years were not given eggs, fish or meat when the family had these foods. We selected this age-group because our studies elsewhere have shown us that children up to two years receive sufficient attention from mothers. Children of the school-going-age-group are able to look after themselves to a considerable extent. It is the children of the preschool age who are likely to suffer some neglect.

TABLE 4
RELATIVE POSITIONS OF THE THREE TYPES OF VILLAGES IN REGARD TO UNDERSTANDING OF
CHILD NUTRITION

Item	Agricultural villages	Coastal villages	Tribal villages
Ages for starting			
Liquid supplements	1	2	0
Solid	1	2	0
Dal water	1	2	0
Rice kanji	1	2	0
Rice	0	2	1
Eggs	0	2	1
Banana	0	2	1
Change over time concerning			
Liquid supplements	1	2	0
Solid supplements	2	0	1
Food when child has			
Ordinary fever	2	0	1
Cough and cold	0	1	2
Total	9	17	7

It is worth mentioning here that except for a microscopic minority, all the households were non-vegetarian. In agricultural villages, only 3.7 per cent of the children in the specified age-group were not given preparations of eggs, fish or meat while the rest of the family had them. Corresponding percentages in coastal and tribal villages were 4.9 and 2.1 respectively. On the whole, these are very low percentages and it is very likely that individual preferences, rather than any beliefs, were at work. Thus, it is evident that where sources of animal protein are concerned, young pre-school-age children get what everybody else in the family gets.

In regard to pulses, the situation was somewhat different. In the agricultural villages, all the children aged 2-5 years received some preparation of pulses. In the coastal villages, about 10 per cent of these young children were not given any such preparation. In the tribal areas, this percentage was around six. In view of the low consumption of pulses, these percentages need not cause any surprise. In agricultural villages, two or more preparations were mentioned in respect of 72.8 children. Corresponding percentages in the coastal and tribal villages were 28.4 and 38.3 respectively. It is here that agricultural villages score heavily against the other two types. What is surprising is that the coastal villages lag behind even to the tribal villages. What preparations are mentioned is also worth noting (Table 5).

TABLE 5
PERCENTAGES OF CHILDREN AGED 2-5 YEARS WHO RECEIVED SPECIFIED PREPARATIONS OF PULSES

Preparation of pulses	Per cent of children in;		Tribal villages
	Agricultural villages	Coastal villages	
Unsprouted pulses mostly in the form of dal	86.8	64.7	Not available
Laddu	63.2	21.6	21.9
Usal prepared from sprouted pulses	2.2	7.8	2.1
Any other	3.7	1.0	2.2

We did not ask any specific questions on the consumption of sprouted pulses to the other members of family and as such are unable to say whether people make any special distinction between young children's food and food for others, so far as this particular item is concerned. However, what makes the above figures noteworthy is the fact that sprouted pulses find a significant place in Maharashtrian diet and it is, therefore, surprising that low percentages have been recorded here for preparations from sprouted pulses.

Children's Nutrition Status

Against this background, it would be interesting to see the status of child nutrition in the three types of villages. We present the data in Table 6.

It is seen that relatively more children (49.7 per cent) in the tribal villages have low nutrition status while their percentage in the relatively better off category is the lowest (4.0). This finding is not surprising and is in consonance with the other findings that mothers there show a relatively poor understanding of the requirements of child nutrition and suffer from other material disadvantages.

However, it is worth noting that between agricultural and coastal villages, the advantages in regard to understanding lie with the coastal villages but it is seen that relatively more coastal children suffer from low nutrition while relatively fewer among them show satisfactory nutrition status.

TABLE 6
STATUS OF CHILD NUTRITION IN THE THREE TYPES OF VILLAGES

Type of village	Per cent distribution of children by percentage of expected weight					Total
	65 or less	66-70	71-80	81+	NR	
Agricultural	36.7	22.5	25.0	13.3	2.5	100.0
Coastal	39.3	11.2	31.5	11.2	6.7	99.9
Tribal	49.7	20.4	19.8	4.0	6.1	100.0

An Interesting Question

In view of the importance of socio-economic factors, we give in Table 7 some data to compare the socio-economic situation of the agricultural and coastal villages. The data for the tribal villages are given not by way of comparison but only to complete the picture.

It was observed that the overall socio-economic situation is much better in the agricultural villages. In this favorable background, it is partly understandable if, the nutrition status of children there is relatively better. The more important question, however, is why, given the favorable background, should the mothers in agricultural villages give a relatively disappointing account of themselves so far as understanding of child nutrition is concerned? In earlier study in Greater Bombay too, we had noticed a closely resembling situation. We had noticed that the proportions of children who suffered from marasmus and riboflavin deficiency were higher among children of mothers who were relatively more knowledgeable about MCH services than among other children. On some reflection, we came to the conclusion that the relationship between the two variables needed to be *looked* at from the other end: mothers whose children suffered

TABLE 7
SOCIO-ECONOMIC SITUATION OF THE AGRICULTURAL AND COASTAL VILLAGES

Item	Per cent of respondents in:		
	Agricultural villages	Coastal villages	Tribal villages
Respondents reporting annual household income of Rs.2,501 or more in cash or kind in 1973	55.6	15.4	12.9
Respondents living in huts in 1974	11.4	29.5	65.8
Respondents reporting "Fair or Good" education in 1974 for the preschooler's father	33.0	18.0	5.1
Respondents reporting that in 1974 preschooler's father read newspaper daily or frequently or got it read	55.7	43.6	29.5
Respondents reporting that in 1974 social contacts of the preschooler's father were good	44.3	24.4	8.5

from the above deficiencies were more likely to get to know about MCH services. Their need to be more knowledgeable was obviously greater than the need of other mothers.

A similar relationship may be operating in the area-wise differences between the three types of villages so far as mothers' understanding of child nutrition are concerned. Those mothers, who have less nourished children may wish to know more about increasing their children's weights, and thereby, nutrition status. They may be more interested in finding out ways and means of doing so despite their socio-economic handicap.

Some Additional Data

Understanding of child nutrition could be related to the question: whose advice did the rural mothers seek? The answers we received show an interesting pattern. In the first instance, we note that nearly one-third of mothers in the tribal villages (32.5 per cent to be exact) had neither sought nor received any advice from anybody on their children's diet. The corresponding percentages for the agricultural and coastal villages were 21.6 and 14.1, respectively. A relevant piece of information in this context is that the percentages of nuclear families were 79.7 in tribal, 68.0 in agricultural and 75.6 in coastal villages.

The only prominent category of persons whose advice was sought and received in 1974 was that of ANMs and Part-Time Social Workers who were specially recruited for the Palghar Project and whose distinctive job—assignment was paying domiciliary visits to mothers, befriending them and giving them advice on children's diets and persuading them to follow the advice for a sufficiently long time. In tribal villages, ANMs and Part-Time Social Workers were mentioned by 52.5 per cent and in agricultural villages by 56.7 per cent and in coastal villages by 67.9 per cent mothers. This also explains partly why mothers in coastal villages were relatively more knowledgeable.

It is seen that persons such as children's grandparents, other relatives, neighbors, *vaidya*, *bhagat* or *hakim*, and others were each mentioned by less than 5 per cent mothers. Only 8.2 per cent mothers in agricultural villages mentioned the doctor.

From another point of view, the data show that in a 3-year period, the Palghar Project staff could show its impact on a significantly large section of the target population. What it could not do and the reasons for them could form the subject-matter of another paper.

In the end, we may draw some conclusions for programme planning. An overall nutrition programme should be seen as being composed of two distinctly separate, though interrelated, components of nutrition rehabilitation and child nutrition education. (The same would be true of other similar programmes as well, *e.g.* child health.) Our data here indicate that different, though once again inter-linked, strategies would be required to attend to the two components. The underlying reason would be that mothers of nutritionally weak and normal children are likely to have different attitudes to one common community programme of child nutrition.

In any programme, it is inevitable that immediate attention be drawn on those who show symptoms of inadequacy. In the case of a primarily nutrition programme, it is only to be expected that nutritionally weaker children should receive greater attention and also that their mothers should receive more advice on adequate child nutrition. This is considered justifiable according to the usual norms for prescribing programmatic priorities.-

While this may be true of the nutrition rehabilitation component of the overall programme, it is necessary that the child nutrition education of the mothers should be given, what can be called, a "positive bias" and that it be placed on a different footing. By "positive bias" we mean that mothers of healthy and nutritionally sound children should receive equal attention. They should be sufficiently motivated to understand and follow the basic need of good child nutrition. Our data provide a hint that such a task may not be so easy and may even require more-than-usual persuasive and effective skills of communication. Adequate training of field workers is indicated.

Acknowledgement

I am grateful to Dr. P.M. Shah, Principal Investigator of the Palghar Project and Director of the Institute of Child Health, J.J. Group of Hospitals, Bombay for his permission to use the data.

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**A STUDY OF FACTORS RELATED TO RURAL JOB PREFERENCE
AMONG PROSPECTIVE NURSING GRADUATES****

**Violet Jayachandran*, J, Gladis, Esther Hemanalini Mariam Mathew,
Bhaskara Kurup and Ram Kumar Dube**

ABSTRACT

Four hundred and thirty prospective nursing graduates from ten schools and five colleges in India were studied to identify factors related to their preferences for work in urban or rural areas. Seventy per cent expressed a preference for urban work. Significant factors related to rural preferences were: religion and background (rural or urban); type of educational institution (government or non-government); and living in a rural setting during community nursing experience. Of the personal, professional and socio-cultural factors related to rural work preference, the most significant were: accommodation, sanitation and safe water; job availability for spouse, security, and school for children. Of the personal and professional factors, the most important were: continuing education opportunities, job satisfaction, and intellectual stimulation.

It is generally believed that professional nurses are reluctant to work in rural areas. It has been observed that nurse-midwives with community training are not keen to work in rural areas. Rather they prefer to return to the hospital setting as staff nurses. The factors which discouraged the nurses from preferring the rural setting have not, however,

Professor College of Nursing, C.M.C. Hospital, Vellore, Tamil Nadu and Principal Investigator

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been carefully identified and examined. The suggested new pattern of health care personnel does not include a position for the professional nurse in the rural area. It is the conviction of the investigators that the nurse does have a significant contribution to make in the community health setting. Many would opt to work in a rural setting, if an acceptable standard of living and other requirements could be identified and provided. Before suggesting what incentives should be provided, an investigation of the nature and extent of these needs must be undertaken.

Objectives

The present study was conducted with the objectives:

- 1 . to identify selected factors which favor job preference in rural areas by prospective nursing graduates, and
- 2 . to assess the relative influence of working conditions on rural job preference.

Hypotheses

Six hypotheses were advanced:

- H1. Prospective nursing graduates' choice of working in rural areas is associated with the type of nursing programme (bachelor's degree or diploma);
- H2. There is an association between the prospective nursing graduates' choice of working in rural areas and the nature of their teaching institution;

There is a significant relationship between number of hours of clinical experience in a rural setting of prospective nursing graduates and their rural job preference;
- H4. Living in a rural setting while gaining experience in community health nursing is conducive to preference for work in a rural area;
- H5. There is an association between the background (rural/urban) of ' the prospective nursing graduates and preference for work in a rural area;

Rural job preference is associated with the religion of prospective nursing graduates.

Methods

The research approach for the study was a descriptive survey.

Setting: The settings were urban colleges and schools of nursing from selected geographical areas in India. All the colleges selected offer a bachelor degree programme of four years duration to women students; the schools of nursing offer a diploma programme in general nursing and midwifery of three and a half years to women students. Community health nursing is integrated in both the basic programmes, as suggested by the Indian Nursing Council. Graduates of both programmes are expected to function in a first level position in a community health setting.

Sample: The population included 430 final year students from six bachelor degree programmes in nursing and from ten diploma programmes in general nursing and midwifery in India. The colleges and schools of nursing were randomly selected and represented the following States: Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Punjab, Tamil Nadu and Union Territories of Chandigarh and Delhi. Of the six bachelor degree programmes originally selected, five agreed to participate in the study. All the ten schools that were selected agreed to participate.

Institutions In which the students had not completed the community health nursing experience in the final year were excluded from the study. A description of the sample according to type of school, type of programme, age, residence, religion and marital status is shown in Table 1.

Instruments: The instruments used were a proforma and a questionnaire. The proforma was completed by the principals of colleges or schools of nursing. The information sought in this proforma were: number of hours of theoretical and clinical experience In community health nursing in each academic year; number and experience of personnel teaching community health nursing, and the setting for clinical experience. The proforma also asked whether or not the students lived in the rural area during community health

TABLE 1
CHARACTERISTICS OF BACCALAUREATE AND DIPLOMA STUDENTS

Instituions	No.	Ase		Religion				Marital Single	Status Married	Residence	
		Below 26	Above 26	Muslim	Christian	Hindu	Other			Urban	Rural
Baccalaureate											
A	17	17	—	2	11	4	—	17	—	12	5
B	37	35	2	-	19	17	1	36	1	30	7
C	21	21	-	-	7	10	4	21	-	14	7
D	44	38	6	-	41	3	-	44	-	22	20*
E	36	34	2	-	30	5	1	32	3*	16	20
Total	155	145	10	2	108	39	6	150	4*	94	59
Diploma											
A	49	44	5	4	20	25	—	45	4	7	38*
B	16	16	-	-	13	3	—	16	-	3	12
C	32	26	6	1	11	20	-	19	13	18	14
D	23	22	1	—	16	7	-	23	-	11	12
E	40	33	7	-	24	16	-	34	6	35	5
F	34	29	5	1	24	9	-	32	2	16	12*
G	16	15	1	-	9	4	3	16	-	7	6*
H	35	16	19	-	35	-	-	35	-	13	22
I	15	15	-	-	11	4	-	15	-	10	5
J	15	15	-	1	11	3	-	14	1	12	2
Total	275	231	44	7	174	91	3	249	26	132	128

(N - 430)

information was not given by all the respondents on these items.

Baccalaureate (Bachelor Degree)

nursing experience. The questionnaire was answered by the final year students of the selected colleges and schools of nursing. The first section of the questionnaire was to obtain background information on the students and their preference for rural or urban work after graduation. Section two of the questionnaire contained five items with six choices each, relating to personal, professional and social factors, influencing job preference. The respondents were asked to rank their preference from "most" to "least" on a score ranging from six to one respectively.

To test the utility and feasibility of sections one and two of the instrument, a pilot study was conducted at a government college of nursing and at a private school of nursing; both college and school were not included in the final study. A total of 24 students responded to this pilot questionnaire. The instrument was refined after the pilot study. The data were collected during the months of April to June 1977.

Analysis of Data

Testing hypotheses: To test hypothesis number one, a Chi-square was computed between the type of nursing programme and rural job preferences of prospective nursing graduates. A Chi-square of 0.54 was obtained indicating that prospective graduates' choice for rural work was independent of the type of nursing programme ($X^2 = 0.54$, $p > 0.05$). Thus, the hypothesis could not be supported (Table 2).

A Chi-square between prospective graduates' rural job preference and the nature of institution (government or nongovernment) was computed in order to test Hypothesis number two. Hypothesis two was supported and it was found that prospective graduates in non-government institutions are more inclined to prefer to work in a rural area than those in government institutions. ($X^2 = 9.54$, $p < 0.01$) (Table 3)

Hypothesis number three stated that there is a significant relationship between number of hours of clinical experience in a rural setting, and rural job preference. A rank-order correlation was computed between numbers of

clinical hours in a rural setting and number of prospective graduates selecting jobs in rural areas. A correlation of -0.41 ($P = -0.41$, $df = 13$) was obtained. This means that no significant relationship was found between number of hours of clinical experience in a rural setting and job preference.

The fourth Hypothesis stated that living in a rural setting while gaining experience in community health nursing is conducive to preference for work in rural areas. A Chi-square was computed and a significant association was found between actual living in a rural area during community health nursing experience and rural job preference. ($X^2=8.1$ $p<0.01$) (Table 4)

TABLE 2

TYPE OF PROGRAMME AND RURAL OR URBAN JOB PREFERENCE OF PROSPECTIVE NURSING GRADUATES IN NUMBER AND PER CENT

Type of Programme	Job Preference				Total
	Urban		Rural		
	No.	%	No.	%	
B.Sc.	105	67.74	50	32.26	155
Diploma	197	71.64	78	28.36	275

$$X^2 - 0.54 \text{ } P < .005$$

TABLE 3

NATURE OF INSTITUTION AND RURAL OR URBAN JOB PREFERENCE OF PROSPECTIVE NURSING GRADUATES IN NUMBER AND PER CENT

Nature of Institution	Job Preference				Total
	Urban		Rural		
	No.	%	No.	%	
Government	192	74.42	66	25.58	258
Non-Government	92	59.35	63	40.64	155

$$X^2 - 9.54, \text{ } P < 0.01$$

Hypothesis number five stated that an association exists between the background of the prospective nursing graduates and their preference for work in a rural area. It was found that a rural background is significantly associated with prospective nursing graduates' preference for work in a rural area. ($X^2 = 7.79$, $p < 0.01$) (Table 5)

To test Hypothesis six, a Chi-square was computed between rural job preference and the religion of prospective nursing graduates and it was found that religion is significantly associated with preference for work in rural areas ($X^2 = 5.63$, $p < 0.05$). This finding shows that a larger percentage of Christians than non-Christians expressed a preference for work in a rural setting (Table 6)

A summary table of the above six factors is presented in Table 7.

Descriptive analysis: Figure 1* reflects the rank order preference of prospective graduates for six types of nursing position. Strong preference was shown for the position of "staff nurse in hospital" which was 76, 56% followed by "staff nurse in school of nursing" scoring 46.47%. "Nursing in rural health centre", "military nursing service" and "staff in urban health centre" scored more or less equally i.e. 28.83%, 28.07%, 27.60% respectively.

TABLE 4

LIVING IN A RURAL SETTING DURING STUDENT EXPERIENCE AND RURAL OR URBAN JOB PREFERENCE OF PROSPECTIVE NURSING GRADUATES IN NUMBER AND PER CENT

Living in Rural Setting	Job Preference				Total
	Urban		Rural		
	No.	%	No.	%	
Living in Rural Setting	212	65.23	113	34.77	325
Not Living in Rural Setting	72	81.82	16	18.18	88

$X^2 - 8.1$, $P < 0.01$

**In these Figures and the following Tables, the two highest ranks are presented together as most preferred', the two lowest ranks are presented together as least preferred' and the two middle ranks are presented as 'neutral'.*

TABLE 5

RURAL OR URBAN PLACE OF REARING AND RURAL OR URBAN JOB PREFERENCE OF PROSPECTIVE NURSING GRADUATES IN NUMBER AND PER CENT

Place of Rearing	Job Preference				Total
	No.	<u>Urban</u> %	No.	<u>Rural</u> %	
Urban	168	74.34	58	25.66	226
Rural	116	62.03	71	37.37	287

$\chi^2 = 7.79, P < .01$

TABLE 6

RELIGION AND RURAL OR URBAN JOB PREFERENCE OF PROSPECTIVE NURSING GRADUATES IN NUMBER AND PER CENT

Religion	Job Preference				Total
	No.	<u>Urban</u> % No.	%	<u>Rural</u> %	
Christian	182	65.00	98	35.00	280
Non-christian	112	76.71	34	23.28	146

$\chi^2 = 5.63, P < .05$

TABLE 7

FACTORS INFLUENCING RURAL JOB PREFERENCE

Factors Influencing Rural Preference	Job Preference				χ^2
	No.	<u>Urban</u> %	No.	<u>Rural</u> %	
Type of Programmed	302	70.23	128	39.77	0.54
Nature of Institution	284	68.77	129	31.23	10.80**
Living in Rural Setting	284	68.77	129	31.23	8.10**
Place of Rearing	284	68.77	129	31.23	7.79**
Religious Background	294	69.01	132	30.98	5.63*

B.Sc, Diploma
Government, Non-government
Rural or Urban Christian, Non-christian

*p < .05
p < .01

TYPES OF
POSITION

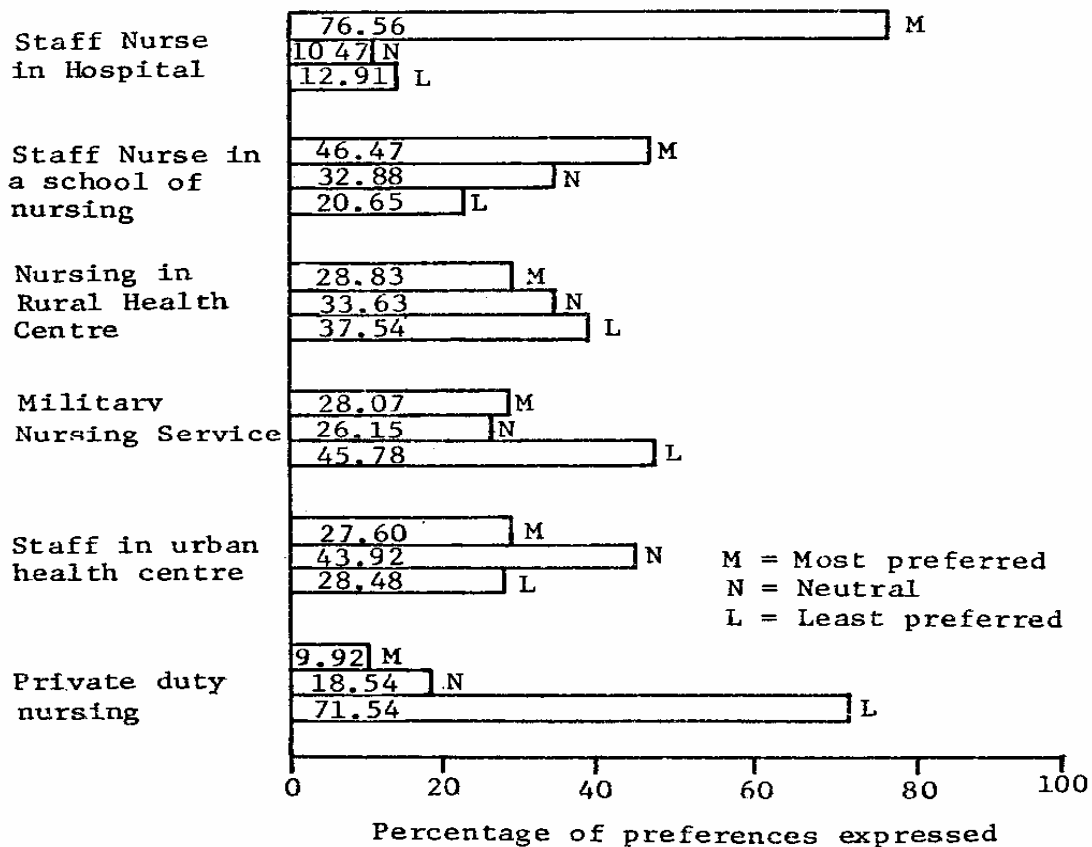


FIGURE 1

RANK ORDER OF PREFERENCES OF PROSPECTIVE NURSING GRADUATES
FOR SIX TYPES OF NURSING POSITION (EXPRESSED IN PERCENTAGE)

Figure 2 illustrates the rank order preference of prospective graduates for the choice of "place of work". It shows "working within their own district" scored 50.3% for "most preferred" while preference for working in "own state" or "any other state in India" scored more or less equally as 39.78% and 41.67% respectively. Working abroad scored relatively low with 54.79% for "least preferred".

Table 8 lists the rank order preference of prospective graduates for "living conditions" which influence choice of job in a rural area. As can be seen from this Table "safe and comfortable accommodation" was the most important factor, scoring 72.26% for "most preferred". "Adequate sanitary facilities" and "safe water supply" scored more or less equally (48.23%, 47.99%) indicating that they had more importance than "electricity", "a vehicle" and "reliable servants".

TABLE 8
RANK ORDER PREFERENCE OF PROSPECTIVE GRADUATES FOR 'LIVING CONDITIONS' WHICH
INFLUENCE CHOICE OF JOB IN A RURAL AREA

Living Conditions Influencing Choice of Job in Rural Area	Percentage of Respondents			Overall Rank Order
	<u>Most</u> Preferred	<u>Neutral</u>	<u>Least</u> Preferred	
Safe, Comfortable accommodation	72.26	16.54	11.20	1
Adequate sanitary facilities	48.23	33.24	18.53	2
Safe water supply	47.99	38.79	13.22	3
Electricity	28.61	38.86	32.53	4
Vehicle	21.01	18.35	60.64	5
Reliable servants	13.92	19.32	66.76	6

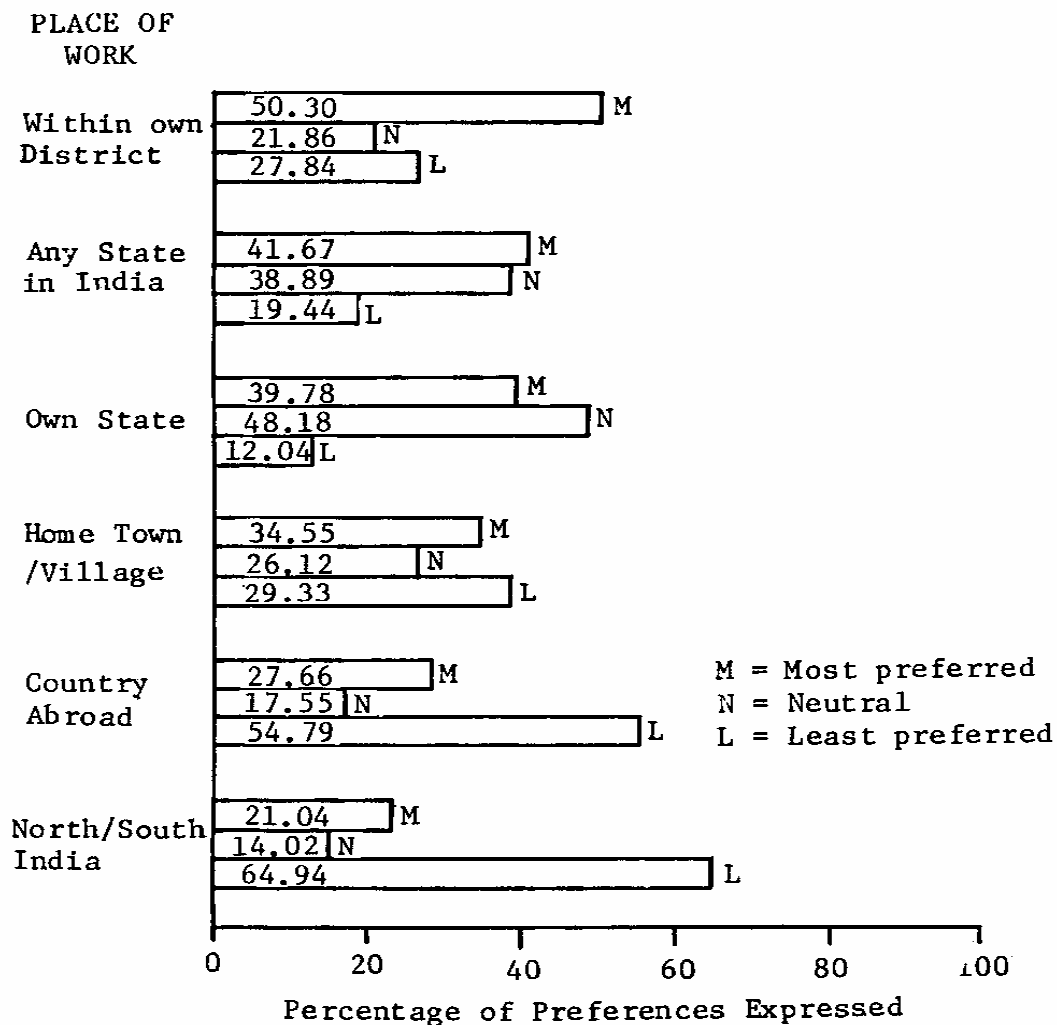


FIGURE 2 .

RANK ORDER PREFERENCES OF PROSPECTIVE NURSING GRADUATES
FOR PLACE OF WORK (EXPRESSED IN PERCENTAGE)

Table 9 reflects rank order preference of prospective graduates for "socio-cultural factors" which influence choice of job in a rural area. "Availability of job for husband/ wife" ranked first with 63.98% as "most preferred". "Personal security" showed a similar degree of importance as indicated by its "most preferred" score of 62.45%. "Extra allowances" ranked sixth (out of seven factors) with a "most preferred" score of only 23.18% and a "least preferred" score of 54.64%.

Table 10 shows rank-order of preference of prospective graduates for "personal and professional factors" which influence choice of job in a rural area. "Opportunities for continuing education" ranked first with a "most preferred" score of 58.05%. "Job satisfaction" scored more or less equally (56.73%). "Provision for attending professional meetings" scored only 19.08% "most preferred".

Discussion

As might be expected of students trained primarily in urban hospitals, 70% expressed a preference for work in an urban area.

TABLE 9

RANK ORDER PREFERENCE OF PROSPECTIVE GRADUATES FOR SOCIO-CULTURAL FACTORS' WHICH INFLUENCE CHOICE OF JOB IN RURAL AREA

Socio-cultural Factors Influencing Choice of Job on Rural Area	Percentage of Respondents			Overall Rank Order
	Most Preferred	Neutral	Least Preferred	
Availability of job for husband/wife	63.98	16.71	19.31	1
Personal security	62.45	22.81	14.74	2
Schools for children	46.71	35.33	17.96	3
Opportunity for recreation and social activities	33.34	32.46	34.20	4
Religious facilities and activities	30.67	42.64	26.69	5
Extra allowances	23.18	22.18	54.64	6
Shopping facilities	15.48	26.94	57.58	7

It may be noted that, when presented with a series of six choices of type of work, a similar result was obtained: 76.56% selecting the position of "staff nurse in a hospital" and 28.83% selecting "nursing in a rural health centre".

Institutional and Student Related Factors

It was expected that more bachelor degree students than diploma students would select work in a rural area. Bachelor degree programmes generally provide a liberal as well as professional orientation, including sociological, psychological and cultural content in their curricula. This orientation might be expected to develop sensitivity to and interest in the health problems of rural people. Further, the four year programme offers more clinical hours of rural nursing to the student. The nature of course offerings as well as the length of time spent in dealing with rural problems would presumably affect the students' relative feeling of competence; this factor, in turn, might be expected to influence her ultimate job preference.

TABLE 10

RANK ORDER PREFERENCE OF PROSPECTIVE GRADUATES FOR PERSONAL AND PROFESSIONAL FACTORS WHICH INFLUENCE CHOICE OF JOB IN A RURAL AREA

Personal and Professional Factors	Percentage of Respondents Ranking Factors			Overall Rank Order
	Most Preferred	Neutral	Least Preferred	
Opportunities for continuing education	58.05	25.07	16.88	1
Job satisfaction	56.73	25.21	18.06	2
Intellectual stimulation	36.81	36.52	26.67	3
Promotional opportunities	33.43	20.17	46.40	4
Independent decision making	31.71	30.29	38.00	5
Provision for attending professional meetings	19.08	30.46	50.46	6

It was found that students graduating from non-governmental institutions were more inclined to select work in a rural area. Factors which might account for these differences were not, however, identified and this question may be worthy of further study.

It was also found that Christian students were more inclined to select rural work than non-Christians. One might expect more Christians to select rural work in the light of the philosophy of the Christian institutions and their orientation, being essentially motivation for service. Interestingly, the number of Christians in the study sample was very high (40.47%) for a country with a low Christian population. Clearly, Christians tend to enter nursing more than non-Christians.

Environmental Working Factors

In addition to the educational and personal background of the prospective nursing graduates, the working conditions in rural areas may be expected to play an important part in the final decision, as to whether or not, the nurses needs for personal fulfillment and job satisfaction can be met.

The prospective graduates were, therefore, asked to rank the minimum environmental, social and professional requirements viewed as essential, if rural employment were to be considered.

Basic needs for safety, shelter and protection ranked highest, as expected in the light of the theoretical framework of hierarchical needs of Maslow.

Among the social-personal factors viewed as essential by the respondents, "availability of job for spouse" ranked highest, followed by "personal security" and "schools for children". Extra allowances ranked lowest although, in attempts to attract health personnel to rural areas, some health authorities offer extra allowances. It seems that, for prospective nursing graduates, potential employment for a spouse is a greater inducement to work in a rural area than extra allowances.

As regards professional requirements, the results were inconsistent. While "opportunities for continuing education"

ranked highest, "intellectual stimulation" ranked third and "provision for attending professional meetings" ranked lowest. It is possible that the issues related to professional growth, are not yet clarified in the mind of a young prospective graduate. It is also possible that the professionally related items listed in the questionnaire need refining in order to provide a more discriminating test of choices.

Summary and Conclusions

This study considered institutional and student-related factors which could favour job preference in a rural area among prospective nursing graduates; also considered were the relative influence of working conditions on rural job preference.

Significant factors related to rural preference were: rural or urban background, and religion of respondents (Christian, non-Christian), type of educational institution (Government and non-government) and living in rural setting during community nursing experience.

Among the living conditions affecting rural preference, the three most important in order of priority were: safe, comfortable accommodation, adequate sanitary facilities and safe water supply. Among the socio-cultural factors, availability of job for spouse, personal security, and school for children were considered as most important. No consistent pattern appeared among the personal and professional factors.

Recommendations

On the basis of the findings the following recommendations are made:

1. An exploratory study should be conducted to assess the factors which are conducive to influencing rural job preference among prospective nursing graduates from non-governmental institutions.
2. If an institution's objective is to motivate graduates to help meet the health needs of people by working in a rural area, then students should be assigned to live in the rural area rather than commuting for community nursing experience.

3. A further study should be conducted which would: (a) refine the questionnaire on rural preference, and (b) study the interaction of factors identified as influencing rural preference.

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PRINCIPLES OF STEAM STERILIZATION

A.K. Nagpal* and Shriniwas**

ABSTRACT

Moist heat in the form of saturated steam under pressure is by far the most reliable medium, known for the destruction of all forms of microbial life. Steam sterilization, therefore, is the most economical, effective and widely used method of seeking sterilization in hospital practice.

This article aims at describing the principle mechanism that makes steam an effective destruction of micro-organisms, the equipment that is most commonly used for the purpose and the practical methods of testing for sterility.

The application of these principles, it is hoped, will ensure standardization and quality control of routine sterilization practice in hospitals thus, contributing towards the reduction in the incidence of hospital acquired infection.

Boiling baking, steaming and soaking have, since the 19th century been the traditional methods of seeking asepsis in medical and surgical practice. With the scientific knowledge acquired so far, we now know that sterilization by boiling is impossible, by soaking uncertain, by baking limited, and is achievable by the use of steam under pressure.

Recent developments in the methods and art of sterilization by the use of ionizing radiations and ethylene oxide gas etc. have shown promise, but not without serious limitations in their use.

**Project Adviser and Head, Institute of Medical Sciences, Srinagar, J & K.*

***Professor of Microbiology, All India Institute of Medical Sciences, New Delhi.*

Boiling water at its maximum sea level temperature of 100°C does not destroy all forms of bacterial life, particularly the spores. Tyndall in his early works demonstrated several instances where bacterial spores survived after a continuous boiling of 4 to 5 hours¹. Many studies including those of Schmidt and Hoeprich indicate that boiling is an inadequate and unsafe sterilization method.

Soaking instruments in germicidal solution is an effective method for disinfection of heat sensitive articles, but its role as a sterilizing medium is uncertain.

Baking or dry heat sterilization is generally restricted to materials which are impermeable to steam and tend to repel moisture. The limitations in the use of dry heat are due to the fact that destructively high temperature and long exposure (almost three times that of steam at same temperature) is required for sterilization.

Steam sterilization, therefore, continues to be the most economical, one of the most effective and the most widely used method of sterilization in hospital practice.

Steam Sterilization

Moist heat in the form of saturated steam under pressure is by far the most reliable medium known for the destruction of all forms of microbial life. The microbicidal property of steam is attributed to the moisture as well as to the heat, and both these factors are essential for sterilization. Since the quality of steam used in sterilization practice is of prime importance, a clear conception of its properties is necessary.

Properties of Steam

Steam is invisible vapor into which water is converted by heat, and can acquire any of the following three forms:

- i. dry, saturated steam
- ii. wet steam; and
- iii. super heated steam.

Dry, saturated steam is the ideal state in which steam can be used as a sterilizing medium. Saturated steam is water vapor as it is generated from the boiling water. In this state it cannot undergo any reduction in temperature without lowering the pressure and *vice versa*. Thus, given the temperature, its pressure can be determined, or given the pressure it is easy to derive its temperature. This relationship of temperature and pressure of saturated steam is represented in Figure 1 as phase boundary curve.

Saturated steam at phase boundary is just at the point where it will condense immediately on meeting a cooler surface. When at 100°C it contains almost seven times as much available heat as the boiling water at the same temperature. Liberation of latent heat on condensation during auto-calving is the principle mechanism that makes steam an effective sterilization medium.

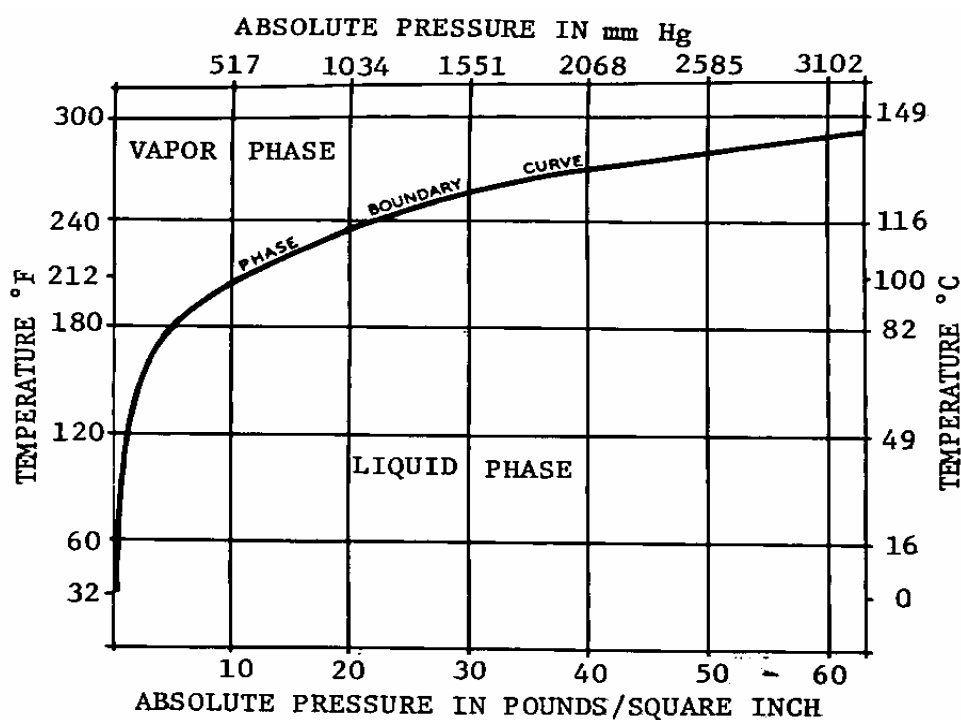


FIGURE 1
PHASE BOUNDARY CURVE INDICATING TEMPERATURE AND PRESSURE
RELATIONSHIP OF SATURATED STEAM

The quality of steam depends upon the weight of dry saturated steam and the entrained water droplets in the form of mist. Thus, a mixture of steam composed of two parts of water and 98 parts of steam by weight is considered to have a dryness fraction of 0.98.

Steam with a dryness fraction of less than 0.95 is not suitable for sterilization work and is called wet steam. Since wet steam contains water droplets in suspension, its use leads to excessive soakage of the packs in the initial phases of sterilization and thus causes difficulties in the terminal drying of the load.

If saturated steam, at any given temperature, is subjected to further heating, it becomes drier and hotter and is called superheated steam. The difference of temperature between superheated steam and saturated steam at a given pressure is called the degree of superheat. Since superheated steam no longer remains at phase boundary, it does not release its latent heat on touching a cooler surface, and therefore, is devoid of the properties of an effective sterilizing agent.

Mode of Action

Steam destroys micro-organisms by coagulation of their cell proteins. These proteins which are enzymatic in nature exist in a finely dispersed colloidal state, and when subjected to moist heat, coagulate through an important characteristic reaction called denaturation³.

Factors Influencing Action

It is conceded from the overwhelming evidence of the earliest experimental data of Chick in 1910 to the present day studies, that the death of vegetative forms of micro-organisms and their spores, during sterilization, is essentially logarithmic. This means that the rate of destruction of micro-organisms is proportional to their initial concentration at any given time. Initial level of contamination of the articles, therefore, determines the duration of the sterilization process.

Air is a stubborn opponent to the diffusion and expansion of steam. Air steam mixture at a given pressure attains a temperature much lower than steam

alone. This difference in temperature is proportional to the partial pressure of air in the mixture. For example, a mixture, of 50% air and 50% steam at 20 p.s.i will attain a Temperature of 115°C, equivalent to that of 10 p.s.i of partial pressure of steam.

Overloading or incorrect positioning of the load interferes with the removal of air and thus affects sterilization process adversely. Figure 2 shows correct and incorrect loading methods in a downward displacement autoclave and a vacuum assisted one.

Sterilization Time

Sterilization time is the sum total of the penetration time, the holding time and safety time Saturated steam on touching a cooler surface condenses.

DOWNWARD DISPLACEMENT

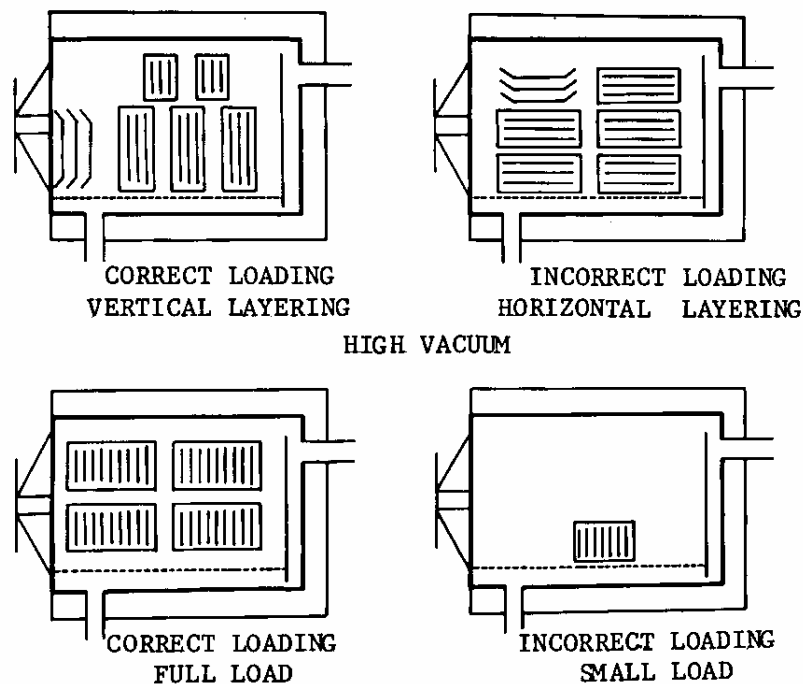


FIGURE 2

CORRECT AND INCORRECT LOADING OF DOWNWARD
DISPLACEMENT AND HIGH VACUUM AUTOCLAVE

During this process it reduces in volume (1,870 times at atmospheric pressure) and heats up the contact surface by releasing its latent heat. A negative pressure is, thus, created and more steam is drawn in. Since the outer surface of the pack is now heated up, it allows the steam to penetrate and condense on the deeper and cooler layers. This process continues till the temperature of the entire load rises to that of the steam. This time taken to heat up the entire load is called penetration time.

The penetration time in a downward displacement autoclave is variable and is longer when compared with that of a vacuum assisted autoclave. This is due to the obvious mechanical assistance of air removal affected in the later.

Holding time is the minimum exposure time required to destroy all forms of microbial life at a given temperature. In case of steam sterilization, the following holding times are commonly recommended.

2 minutes at 30 p.s.i at 134°C
8 minutes at 20 p.s.i at 126°C
12 minutes at 15 p.s.i at 121°C

In order to ensure sterility, every part of each article must be exposed to an adequate temperature for a sufficient length of time.

The Medical Research Council Working Party, therefore, has recommended the following exposure times⁶. Same time temperature relationship has been recommended by Kelsey⁷ Johnson and Perkins.

TABLE 1
EXPOSURE TIME RECOMMENDED BY MEDICAL RESEARCH COUNCIL WORKING
PARTY

Holding time in minutes	Safety Time in minutes	Sterilization time in minutes	Pressure p.s.i	Temperature °C
2	1	3	30	134
8	2	10	20	126
12	3	15	15	121

Application

Sterilization by moist heat is affected through the use of a steam sterilizer or an autoclave. There are many designs of autoclaves that one observe in literature but the following two types are most often encountered.

- i. downward displacement autoclave; and
- ii. Vacuum-assisted autoclave.

In downward displacement autoclave, Figure 3, steam is admitted at the top of the chamber. Steam being lighter than air displaces the later downwards, from where it is let out through the chamber drain. This type of autoclave which was invented in 1930 has almost disappeared from the Western scene. In India, however, it will be quite some time before such a development takes place because the downward displacement autoclaves are currently being introduced in our hospitals in an attempt to centralize sterilization process.

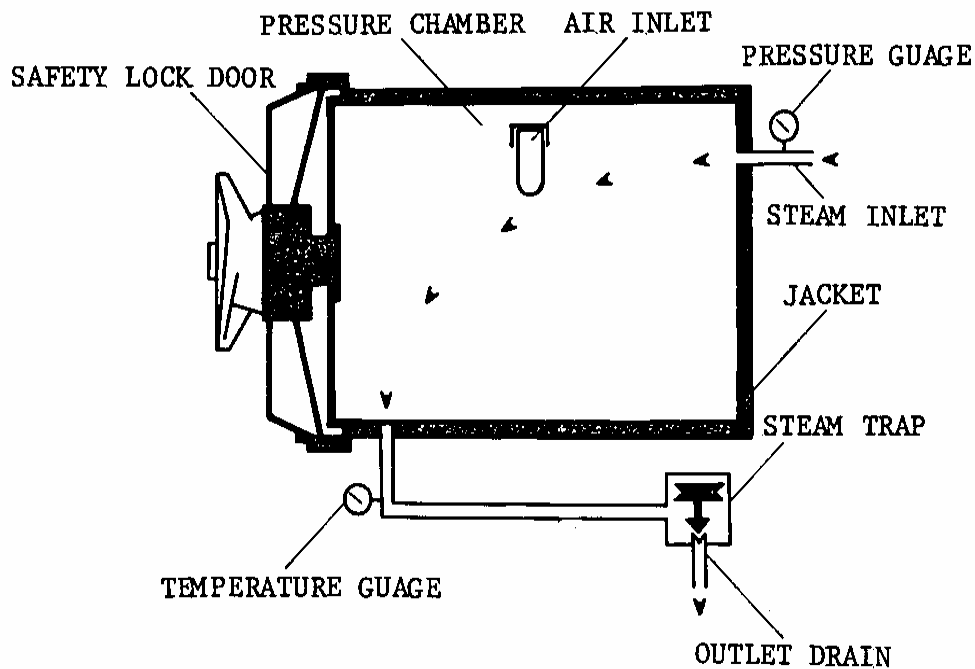


FIGURE
DOWNWARD DISPLACEMENT AUTOCLAVE

Vacuum assisted autoclaves, Figure 4, are fitted with a vacuum device to remove the air from the chamber prior to steam entry. This pre-vacuum facilitates rapid air evacuation and faster steam penetration of the load. In some autoclaves a second pre-vacuum is created, thus making it possible to attain absolute pressure upto 20 mm of Hg.

Pulsed steam dilution autoclave is a more recent version of vacuum assisted autoclave where pre-vacuum period is modified as follows: ⁱ

- i. vacuum;
- ii. steam injection;
- iii. vacuum; and
- iv. cycle 'a' to 'c' is repeated 5 times resulting in a decrease in air content of the chamber, each time.

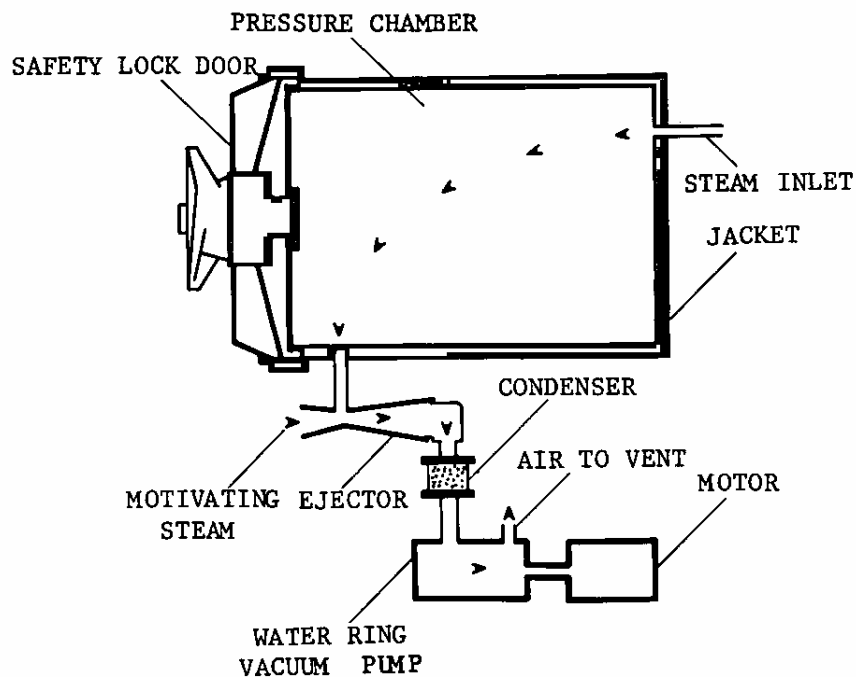


FIGURE 4
VACUUM ASSISTED AUTOCLAVE

These autoclaves are being developed in India with indigenous know-how and may form a part of our C.S.S.D's in the near future. The pulsed steam dilution autoclaves which promote rapid steam penetration and sterilization are recommended for dense challenge loads of linen packs.

Indications

Steam sterilization is by far the most economical and reliable method of sterilization used in hospital practice. The efficiency and effectiveness of steam as a sterilizing agent is due to its condensation, liberation of its latent heat, reduction in volume and deposition of moisture.

These properties of steam ensure:

- i. rapid heating and rapid penetration of the load;
- ii. destruction of all forms of microbial life within minimum time/temperature;
- iii. no residual toxicity;
- iv. little damage to most of the hospital supplies;
- v. easy quality control of the process; and
- vi. economy and reliability.

Limitations in the use of steam sterilization also depend upon certain properties of steam alone. These are:

- i. incomplete air removal may lead to sterilization failure;
- ii. superheated steam acts as hot air with diminished microbicidal properties; and
- iii. method is unsuitable for heat sensitive and non-permeable materials.

Testing for Sterility

Most practical methods of testing sterilizer's performance do not in any way indicate that the material subjected to the process has been sterilized. These methods only give an accurate measure of the exposure to which the sterilized goods have been subjected, and therefore, are designed to determine the efficiency of the autoclave. These can be instrumental, chemical or bacteriological.

In the case of instrumental tests, thermocouples are used to monitor the temperature attained within a standard pack inside the autoclave, and also at the chamber drain. A sterilization holding period of 3-1/2 minutes at 134°C or 12 minutes at 126°C is given, and the two temperatures attained are recorded and compared. The sterilizer is regarded as having stood the test, if:

- i. the temperature within the test pack remains at 134°C or 126°C respectively throughout the holding time; and
- ii. the difference between the temperatures recorded within the pack and the chamber drain does not exceed 2°C.

This test illustrates whether correct temperatures are attained within the autoclave chamber, and where thermocouples are available, a weekly test for sterilizer's efficiency is recommended.

'Vacuum and Leak Test' is the commonly used instrumental test for vacuum assisted autoclaves and is carried out daily before the commencement of work to confirm the ability of an autoclave to attain and hold the desired vacuum.

Here, a vacuum of 20 mm of Hg absolute is attained in a closed autoclave and the vacuum pump is put out of action for 10 minutes. In case the desired vacuum is not achieved or the leak rate is more than 10 mm of Hg during the test period, then the sterilizer is said to have failed.

The most commonly applied chemical test and perhaps the most practical one is called 'Bowie Dick Test'. This test signifies the actual penetration of steam into the packs and indicates correctness of exposure in terms of time and temperature. Here, heat sensitive tapes are used, which when subjected to steam sterilization, show a color change in the form of black diagonal lines appearing over the original white or cream background. A uniform color change throughout the tape indicates a satisfactory run.

'Browne's Tubes' are also used as chemical indicators and when used along with the heat sensitive tapes, the test is called 'Modified Bowie Dick Test'.

In the case of biological indicators, actual destruction of micro-organisms is demonstrated. Unfortunately, these indicators are not so reliable and the time factor involved renders them unsuitable for routine use.

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INTEGRATION OF LEPROSY CONTROL WORK WITH GENERAL HEALTH SERVICES AS PLANNED IN MAHARASHTRA ⁺

P. Kapoor*, N.S. Deodhar and M. V. Yellapurkar*****

ABSTRACT

The current literature on integration of Leprosy Control work with General Health Services has been reviewed. In view of the introduction of Multipurpose Workers' Scheme and an experience in a pilot project, the authors feel that the time of integration of leprosy is ripe. The process of involvement of Multipurpose Workers in the Leprosy Control Programme is being introduced in a manner that ensures adequate supervision by the present Leprosy Control staff during the training period and also subsequently for one year so that the transition from unipurpose to integrated service, is a smooth one. After the successful integration of leprosy, the leprosy staff, after adequate training, can be used as Multipurpose Supervisors.

Specialized vertical programmes for the control or eradication of certain diseases are introduced when such diseases pose serious health problems on account of their significant magnitude. The idea is to reduce the problems to such a level so that it can be tackled by the general health services in due course of time.

Specialized services became all the more necessary for the control of Leprosy mainly because of the peculiar nature

* *Joint Director of Health Services (Leprosy), Pune, Maharashtra State.*

***Joint Director of Health Services (Health), Pune, Maharashtra State. (Now Director IIH&PH, Calcutta).*

****Asstt. Director of Health services (Leprosy), Pune, and Maharashtra State.*

+*Based on the paper presented at the Leprosy Research Scientists Conference at the Central Jalma Institute for Leprosy, Agra from 27th to 29th October, 1977.*

of the disease which is associated with grave socio-economic problems. Special provision was certainly essential initially for unipurpose staff for detection of Leprosy patients and to make treatment available to them.

Despite the good achievements of vertical programmes, it must be admitted that such programmes have come to work in too much isolation from the mainstream of general health services, creating almost watertight compartments. Such an extreme state of affairs is undesirable since, it would create a band of unipurpose workers who, in spite of the special skills, acquired by them in their respective disciplines, would be grossly unsuitable to deliver total health care to the community, which is the need of the day.

The acceptability and creditability of the worker by the community would suffer as well, because of his serious limitations to cope up with the general health problems. The health consciousness generated in the masses would not permit their 'felt needs' to be ignored and the emphasis being laid down on a single health problem only.

The National Leprosy Control Programme is no exception to the general observations made above. Its vertical approach has no doubt paid dividends so far. However, if it is not realized by the health planners that unipurpose programmes constitute only a temporary phase and that they must be integrated with the general health services sooner than later, the progress achieved so far may not be sustained and it would be difficult to exploit gainfully the favorable atmosphere and attitude created, for the ultimate achievement of the goal of getting rid of the disease from our country.

Need for Integration

The need for integration of specialized leprosy services with general health services has been recognized in principle at various national and international forums. WHO expert committee on Leprosy has stressed the importance of the matter right from its first meeting. The only point of dispute has been regarding what should be considered as the right time to introduce the same.

The WHO Expert Committee recommended in 1970 the integration of leprosy control in small experimental areas to

start with. The consensus of opinion during the All India Leprosy Workers' Conference at Bhopal was in favor of integration, considering the medical, social, economic, operational, administrative and other aspects, although a caution was given against any hasty step in the direction and a suggestion was given to prepare a suitable plan of "step by step" integration with necessary safeguards. The International Congress on Leprosy held at Bergen in 1973 expressed the same cautious attitude in its remarks: "Complete integration may not be feasible at the present time, however desirable it might be. If integration is attempted too soon, the Leprosy work would be the first to suffer most".

The difficulties foreseen in introducing integration had naturally led to such apprehensions. Dharmendra said in his First Silver Jubilee Conference Memorial Oration delivered at Baroda in 1976 that "Complete integration is neither practicable nor desirable at present". He has, however, conceded that "a start should be made to bring about the conditions necessary for the purpose." He has further recommended that the process of integration should be started in selected areas on a pilot project basis and then adopted on a wide scale after careful evaluation of the results achieved in the pilot projects.

The two pre-requisites for integration as mentioned by Dharmendra are:

1. The degree of success obtained by the specialized service.
2. The preparedness of the general health services, especially at the periphery to take over the added responsibility and to discharge it satisfactorily.

The National Leprosy Control Programme has been in existence for over 20 years now. Yet, the coverage of endemic population has been far from satisfactory. It was envisaged to cover all the endemic population by the end of the 5th Five. Year Plan, but it has not been possible to achieve even 50% of this ambitious target, may be because of financial restraints. Some of the States could not start even the sanctioned centers due to certain practical difficulties.

It is true that there are number of impediments in the way of speedy integration. The prerequisites for integration as laid down by Dharmendra are no doubt logical and ideal. A question, however, arises as to how long be we to wait. Can we really afford to mark time till the ideal situation is reached and the general health services attain the desired standard? Are the hurdles really unsurmountable? While reiterating the unquestioned value of integrated services, the WHO Expert Committee on Leprosy has made a very candid observation that the difficulties are less administrative than attitudinal-.

Time for Integration

It is; therefore, felt that it would be worthwhile to go ahead with integration even at this stage, notwithstanding the probable slight dilution of our achievements in the immediate future, as there are sufficient grounds to believe that the initial loss would be more than compensated by the ultimate wider gains in the long run.

Government of India has already launched the ambitious multipurpose programme, integrating all vertical programmes with the general health services. This is a step in the right direction. However, during its Implementation, care will have to be taken to ensure that leprosy control does find its rightful place in the general health services and does not suffer on account of neglect of any kind.

With the eradication of smallpox from the country and the revised policy in respect of malaria eradication, a large number of health personnel of various categories are now available for utilization in other health programmes. It would be unwise, therefore, not to take advantage of this situation and utilize this staff for augmentation of various health programmes including leprosy, which are to be integrated with general health services.

The experience of an integrated project taken up in Wardha District has shown that it is possible for the Basic Health Workers to suspect cases of leprosy and to conduct monthly clinics for giving treatment to already registered leprosy patients without any major difficulty.

Kapoor *et al.* in their paper "Integrated Surveys as a tool for early case detection in leprosy control programme" state that "a project for total leprosy case detection particularly early leprosy cases, was undertaken in Wardha District which has a rural population of about 6 lacs in 905 villages, through an Integrated survey with the help of all health workers like leprosy technicians, sanitary inspectors, coordinators, malaria workers, smallpox vaccinators and auxiliary nurse midwives. The training given to the non leprosy health workers was for a period of three days making them just fit to suspect all leprosy cases. The final diagnosis was to be made by the fully trained leprosy technicians. The surveys were conducted in batches of 3 to 4 workers. Surveys were conducted for four weeks at a stretch and working for five days every week. Every year two such integrated surveys were conducted. From November 1973 to December 1975, four such surveys were undertaken. During the other period leprosy technicians were conducting the normal surveys. It was found through these integrated surveys that it is possible to undertake the survey of all the villages once in two years. The case detection rate at the end of the fourth survey was found to be 85.5 per cent of the estimated cases in the rural areas. Normally, it would have taken five years to complete the survey of all the villages by the leprosy technicians alone, and the case detection rate could not have been more than 70 to 75 per cent. Through this programme, leprosy patients in every early stage have been detected.

It was further observed that the Basic Health Workers can deliver the treatment to the detected patients once a month after the line of treatment has been laid down by the leprosy paramedical workers (leprosy technician) under regular supervision.

An attempt has been made to present in this paper as to how the process of integration of leprosy control with general health services in the State of Maharashtra is initiated in six districts.

Method of Integration

The first step in this direction is to conduct training of various categories of staff. The medical officers of the

primary health centers, who have to play a key role in the implementation of integrated programmes, are given orientation training in leprosy for six days. This training is to stress on the role of medical officers in monitoring the leprosy work carried out by the multi-purpose workers and also on making them fully acquainted with the management of complications of leprosy.

The supervisory staff on the multi-purpose workers scheme is also to receive orientation training in leprosy for 15 days. The emphasis in this training is on proper diagnosis of leprosy and on carrying out effective supervision over the work of multipurpose workers.

The duration of training for the multi-purpose workers is three months initially. During this training period, leprosy is taught to them. The complete training consists of seven phases (Appendix I), of which, the first five phases are covered during the three months multi-purpose training. The initial training will enable to 'multi-purpose worker to diagnose cases of leprosy, treat uncomplicated cases, and identify complications and to maintain necessary records. The leprosy technicians will attend each and every clinic conducted by the multi-purpose workers during the first 6 to 12 months' transitional period till the multi-purpose workers become competent to conduct clinics independently and maintain satisfactory records. Within the next six months, multi-purpose workers will be trained in the other two phases.

After receiving training in leprosy, each multi-purpose worker will carry out the following activities pertaining to leprosy in his area of operation.

1. Conducting a weekly clinic at his headquarter for leprosy, tuberculosis, malaria and for treatment of minor ailments as per guidelines given in the manual.
2. Weekly or fortnightly (depending on the number of villages) visit to each village in his area, during which he will:
 - i. conduct absentee leprosy patients and persuade them to take regular treatment;

- ii. examine contacts of leprosy patients and look for any suspicious signs of leprosy in them; and
- iii. impart health education about leprosy to the community leaders, prominent persons, leprosy patients and their family members etc.

The survey for detection of leprosy cases will be carried out in groups only, the group consisting of four or five multi-purpose workers headed by one leprosy technician.

Case detection programme will be conducted systematically so as to cover all villages once a year rather than day to day case detection in each village.

It is expected that during the first 6 to 12 months everybody will be conversant enough to carry out the work assigned to him in respect of leprosy control. It may be mentioned here that during the transitional period, the leprosy technicians and the non medical supervisors will devote 70% of their working time for leprosy control work and 30% of their time for other activities so as to ensure that leprosy control work does not suffer. As and when the multi-purpose workers and the health assistants gain sufficient skills in leprosy control technique, the leprosy technicians and the non medical supervisors will devote more time to other health programmes. The leprosy technicians and supervisors are being trained as multipurpose supervisors and they will become multi-purpose supervisors after being adequately trained.

The medical officer of the primary health centre has so far been a silent spectator in the leprosy control programme. Now he will have to monitor and plan all the activities in a manner that will do justice to all the national health schemes.

The important role of referral hospitals for leprosy even after integration in general health services, cannot be lost sight of, in as much as assistance in diagnosis and management of difficult cases, treatment of complications and inter-current illnesses, and facilities of reconstructive surgery for leprosy patients will have to be provided for. With this view of strengthening the referral services for leprosy, all the district hospitals are being provided with a

Temporary Hospitalization Ward and a Reconstructive Surgery Unit

The special programme officers at the district, divisional and the State level will have an important assignment to see that the transfer of leprosy work from vertical to an integrated one is not only smooth but workers at all level give leprosy its due share and time. It is not contemplated to convert the district level and still higher level staff to be multipurpose personnel till the transfer of vertical programme to the multipurpose programme is found to be fully satisfactory after internal and independent assessment. The State level leprosy staff will continue as such for proper planning, supervision, monitoring and other purposes.

It is hoped that this process of integration of leprosy with a transitional period of 6-12 months will not cause any damage to the leprosy work but will strengthen it as there will be six all purpose workers including health assistants and leprosy technicians to look after a population of 20,000 against one leprosy technician at present.

The recommended 6-12 months period is necessary for smooth transition. After leprosy becomes a normal day to day work with the multi-purpose worker, the future role of the leprosy technician will be to work as a health assistant or as a member of the task force at primary health centre or district level.

Acknowledgement

We are extremely grateful to Dr. P.J. Ramachandani, Zonal Leprosy Officer, who is closely associated with this programme in one of the districts for his invaluable assistance in preparation of this paper.

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APPENDIX I

PHASES OF TRAINING IN LEPROSY

<i>1st Phase</i>	<i>No. of Hours</i>
1. Theoretical knowledge about Leprosy i. What is leprosy? ii. Cause of leprosy. iii. How leprosy is transmitted. iv. How deformities are prevented.	3 hours
2. Suggestive signs of leprosy. (Practical Demonstration of various types of leprosy patients and how to suspect them)	1 hour 2 hours
3. Adoption of a village for conducting a regular clinic for minor ailments and leprosy. List of patients (village wise) in the area and doses of D.D.S. to be given to the Multipurpose worker.	
<i>2nd Phase</i>	
How to do effective Health Education - Talking points on leprosy for both patients and community	2 hours

3rd Phase

How to conduct surveys and maintain records
of surveys

5 hours

4 th Phase

1. Diagnostic signs of leprosy

3 hours

- i. How to describe a patch.
- ii. How to test for loss of sensation.
- iii. How to find out tenderness of important nerves (Peronial and Ulnar).
- iv. How to take smears from the skin and Nasal swab. (Demonstration and practice)

1 hour

2. Treatment of uncomplicated cases of Leprosy.

1 hour

5th Phase

1. Identification of complications.

1 hour

i. Reaction.

ii. Neuritis.

iii. Iritis.

2. Skin smears and nasal swabs. (Practice to continue)

1 hour

6th Phase

1. Signs of "Activity", "Inactivity"
"Disease arrested" (Cured) of Leprosy.

2 hours

2. How to classify leprosy.)
)

1 hour

3. How to classify deformities.)

4. Skin smears and Nasal swabs. (Practice to continue)

1 hour

7th Phase

1.	How to conduct good clinic independently.	2 hours
2.	How to maintain record of patients.	
3.	Skin smears and nasal swabs. (Practice to continue)	1 hour
Total + Field Demonstration		27 hours

N. B

1. Demonstration of conduction of good clinic and proper maintenance of records will be started as soon as multipurpose workers start the field activities.
2. Seventh Phase is classroom training to emphasize the importance and remove the difficulties.
3. Even after full training, the Multi-purpose worker will be supervised, guided and trained for a period of 12 months by the leprosy staff.
4. Training of the technique of taking skin smears and nasal swabs will be started in the 4th phase and will continue till the multipurpose workers develop sufficient skill in the technique.

DETERMINANTS OF MUSLIM FERTILITY IN AN URBAN SETTING

M.E. Khan*

ABSTRACT

In the present paper an attempt has been made to single out some of the variables which play important roles in increasing or reducing the Muslims fertility. To enrich the findings, the sample has been divided into two relatively more homogeneous groups and their differential fertility has also been studied.

Muslims are the largest minority in India. According to 1971 census, they constitute 11.2 per cent of the total population. During the last five decades, their population growth was relatively faster than the Hindus. Though conclusively not established, it is still generally believed that the Muslims have higher fertility than the Hindus. Unfortunately, no serious attempt has been made to clear this ambiguity. Recently Bose after reviewing 13 major studies which had some data on fertility differential by religion concluded that still "we do not know whether or not Muslim fertility is higher than Hindu fertility"¹.

Data

The study is based on the survey conducted by the author in 1974 in Kanpur city. It is one of the industrial metropolises of Uttar Pradesh.

According to 1971 census, its population is about 1.3 million. The Muslims constitute 20.1 per cent of the total

Demographer, Operations Research Group, Race Course, Baroda.

population. For administrative purposes, the Municipal Corporation has divided the city into about 160 small parts known as *Chak*. Most of the Muslims are concentrated in a few areas. Census of India does not publish any data on the religious composition of different chaks but on a rough estimate given by the Corporators of those areas, 19 chaks contain more than 80 per cent of the Muslim population. All those 19 *chaks* were chosen for the present study. Besides those *chaks*, 3 more localities which had predominantly Muslim population (more than 80%) were also included in the study, although they lie outside the municipal area.

Using election voter list, which was fairly up-to-date because of mid-term Uttar Pradesh Assembly election in 1973, a random sample of 350 married couples was drawn from the selected areas. The data was collected with the help of two male and two female investigators.

Two different schedules, one for the wife and one for the husband, were used to collect the information. Generally both the interviews were taken simultaneously, that of the husband by the male investigator and of the wife by the female investigator. On an average, time taken to fill in a husband and a wife schedule was one hour and 30 minutes respectively. After dropping incomplete schedules and those who refused to give interview, complete information was collected from 330 couples.

Sub grouping of the Sample

In social research, it is a common practice to divide Indian population by castes. It is valid so far as the Hindus are concerned. As for Muslims, castes are neither clearly identifiable nor rigid. Inter caste marriage is quite common and the total Islamic ethos are against any such stratification. In such cases, perhaps a more meaningful stratification could be made on the basis of their, social and cultural life. For example, the Muslims of Kanpur city can be broadly divided into two major groups; Occupational Muslims (CM) and Non-occupational Muslims (NOM), Occupational Muslims COM) are recognized by hereditary profession followed by a large majority of that class, Ansari and Qure-shi are example of such classes, as are engaged in traditional profession of weaving and meat selling respectively. Non-

occupational Muslims (NOM) are those who are not engaged in any particular traditional occupation. Incidentally, a division of Kanpur Muslims on this basis classifies all the so called 'high caste'¹ people *e.g.* , Syed, Sheikh and Pathan in the NOM group and the remaining Muslims who are at the 'lower level' of social hierarchy, in the OM group. The Muslims who constitute the CM group in Kanpur city are mainly the Ansaries, Qureshies, Bisaties and Iraques. While these two groups are culturally quite different from each other, the sub-groups within the groups are considerably similar to one another in respect of their values, aspirations, and behavior. They constitute a sub-cultural group which differ in several respects but yet share certain features with other social segments. Similarities and dissimilarities between OM and NCM have been discussed in detail elsewhere². Briefly, the OM are very cohesive and are concentrated in some specific localities. Educationally they are backward and have strong group affiliation. They seldom marry outside their group. They have a system of providing economic assistance to the needy people of their community in some way or the other.

The NOM which constitute the majority of the Muslim population in Kanpur do not necessarily belong to high income brackets, and indeed the economic difference between OM and NCM group is not significant. Majority of their male members work as laborers, small businessmen or low cadre salaried people. However, they belong to a more diffuse, amorphous and higher prestige group, and educationally they are better off than the OM. Their females enjoy relatively more independence and have better communication with their men folk. They neither form any cohesive group nor live in any particular locality like Ansaries or Bisaties. Among the NCM, inter-group marriage is prevalent and they are less orthodox and ritualistic than OM. The feeling of 'caste' solidarity is rather low and there is no organized or regular provision for any economic assistance for a needy person of their own community.

Socio-economic and Demographic Characteristics of the Respondents

Table 1 presents the socio-economic and demographic characteristics of the respondents. Out of the 330 res-

pondents, 134 were Occupational Muslims and 196 Non-occupational Muslims. Mean age of the wife for the total sample was 31.1 (S.D.=7.6) years. The wives of the CM were slightly older than the wives of the NCM. About 19 per cent of the male respondents and 46.3 per cent of the females were illiterate. A comparison of the two groups of the Muslims indicates that the CM had less year of schooling than the NOM. A highly significant value of X^2 ($p < .01$) further confirmed the above finding.

Twenty-one per cent of the respondents were laborer, 20 per cent vendor and another 14.5 per cent were general merchant. The percentage of service holders, professionals and manufacturers in the sample were 19.7, 7.0, and 15.5 respectively. The proportion of the service holders and the professionals among CM was considerably less than the NOM. In contrast, the percentage of manufacturers *e.g.* leather and handloom industries among the (OM was more than double (22.3%) of NCM (10.7%).

The economic position of the respondents was measured by annual income per adult which was calculated by dividing the total annual income of the family from all sources by the number of adults in the family i.e., aged 15 years or more. To increase the accuracy of estimate, total income of the family was calculated by component method developed by Eva Mueller and Deborah Feedman. The average income per adult for the total sample was Rs.1, 549. For OM and NCM, it turned out to be Rs.1,507 and Rs.1,580 respectively. The income difference between the two groups of Muslims was statistically not significant at 5% level of significance.

Majority (62.1%) of the respondents were living in Joint families. Husband-wife communication on desired family size and use of contraceptive was considerably low for the total sample. As high as 56 per cent of the total couples indicated a very low level of communication on these topics*

**The index of husband-wife communication was made by adding the scores of 4 items relating to husband-wife communication on number of desired children, use of contraceptive and the stages of the married life cycle when they first talked about the issues. For detailed methodology see Khan, M.E. "Correlates of Muslim Fertility in an Urban Setting: A Case Study of Kanpur city" unpublished Ph.D. Thesis, Indian Institute of Technology, Kanpur, 1975, p. 66.*

TABLE 1
SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

	Occupational <u>Muslim</u>	Non-occupational <u>Muslim</u>	All Muslims
present Age of Wife			
20-24	15.8	27.0	22.4
25-29	18.6	25.0	22.4
30-34	24.6	20.9	22.4
35-39	23.1	12.7	17.0
40-44	13.4	10.2	11.5
45+	4.5	4.2	4.3
Mean Age	32.4	30.2	31.1
SD	7.5	7.6	7.6
Duration of Marriage (yrs.)			
0-4	7.5	15.8	12.4
5-9	15.6	18.4	7.3
10-14	16.5	22.4	20.0
15-19	25.3	20.4	22.4
20-24	20.2	11.8	15.1
25+	14.9	11.2	12.8
Educational Qualification of Husband			
Illiterate	23.9	15.8	18.9
Can read but no formal education	10.5	5.6	7.6
1-5 class	19.4	10.2	13.9
6-8 class	14.9	13.8	14.2
9-10 class	9.7	21.4	16.7
Intermediate	11.9	12.8	12.4
B.A.+	9.7	20.4	16.2
Educational Qualification of Wife			
Illiterate	56.7	39.2	46.3
Can read but no formal education	24.6	16.8	20.0
1-5 class	3.0	11.8	8.2
6-8 class	6.0	8.2	7.3
9-10 class	5.3	8.7	7.3
Intermediate	3.0	5.6	4.5
B.A.+	1.4	9.7	6.4

Table 1 Contd.

	1	2	3
Occupation of Husband			
Unemployed	0.9	3.1	2.1
Labourer	20.9	21.4	21.2
Vendor	26.9	15.3	20.0
Service	14.5	22.9	19.7
Professional	4.5	8.7	7.0
Manufacturers	22.4	10.7	15.5
Annual Income per Adult Person			
Rs.200 or less	6.0	2.0	3.6
201-500	6.7	5.6	6.1
501-800	20.9	16.8	18.5
801-1200	23.9	24.5	24.4
1201-2000	14.9	21.4	18.8
2001-3000	6.7	5.7	6.1
3001+	20.9	24.0	22.7
Mean	1507	1580	1549
Type of Family			
Nuclear	38.1	37.8	37.9
Joint	61.9	62.2	62.1
Exposure to Mass Media			
Low exposure	55.2	36.2	43.9
Medium exposure	21.7	22.4	22.2
High exposure	23.1	41.3	33.9
Husband-wife Communication			
Low communication	72.4	44.9	56.1
Moderate communication	21.6	37.8	31.2
High communication	9.0	17.3	12.7
Level of Empathy			
Low empathy	35.1	20.4	26.4
Medium empathy	33.6	37.2	36.0
High empathy	31.3	42.4	37.6

Husband-wife communication was much less among the OM as compared to NCM ($X^2 = 25.2$, d.f = 2, $p < .01$). The level of empathy which was defined as correct awareness of the respondent about their spouse's opinion on desired family size and practice of family planning was moderate for the total sample and relatively better for the NCM. About 34 per cent of the total couples were well exposed to the mass media. The NCM couples had relatively more exposure than the CM couples ($X^2 = 14.5$, d. f - 2, $p < .01$).

General Marital Fertility Rate (GMFR)

GMFR is defined as the number of live births per thousand married women of child bearing age for a single calendar year. However, considering the small sample size in the present study, GMFR was computed for a three year period preceding the survey. GMFR for all Muslims in Kanpur was found to be 224. It is slightly less than the GMFR of the Muslims C230) of Lucknow and higher than the GMFR of the Hindus (160 for high caste Hindus and 200 for low caste Hindus) of Lucknow in 1968. In Kanpur, the GMFR of the CM group was found to be higher (231) than that of the NCM (222). The difference was, however, not significant.

To see whether or not during the last few years the fertility among the Muslims has declined, two general marital fertility rates were computed for two-three year periods viz. 1-3 and 4-6 years before the survey. Percentage change in the rate was than computed between these two periods.

It appears from table 2 that the fertility rate among

**The index of husband-wife empathy was similarly made by aggregating the scores of two-items which indicates how far the couples were correctly aware about their spouse's opinion on number and sex of the desired family size and use of contraceptive. The data was obtained by comparing the responses of husband and wife on the issues. See Khan, M.E. Ibid, p 68*

***The index of exposure to mass media was made by adding the scores of three items relating to the frequency of listing of radio by husband and wife and frequency of visit to cinema. See Khan, M.E. Ibid, p 72*

Muslims, both for the OM and NOM has slightly declined during the period 1967-73. The decline in the fertility of NCM seems to be slightly more than the OM. But again the difference was not significant.

Determinants of Muslim Fertility

After reviewing a number of studies which give some information about the social and economic determinants of human fertility, 20 variables were selected to explain the fertility variation among the Muslims. Linear regression models were used to assess their predictive power, when a number of variables were working simultaneously. To get the best regression model, different numbers of explanatory variables in different combinations were used. The models were compared on the basis of the values of R^2 which is a summary statistics analogous to R^2 (multiple correlation coefficient) and is defined as

$$R^2 = 1 - V(e)/V(Y)$$

where $V(e)$ is the residual variance and $V(Y)$ is the variance of dependent variable defined as $v(Y) = \sum (Y - \bar{Y})^2 / (N - 1)$. Largest R^2 indicates the least residual variance and generally the best regression model⁵. The use of R^2 for the comparison purpose of regression models is avoided because of the varying number of explanatory variables in the regression equations. A necessary condition for using R^2 for comparison of the relative performance of two competing regression equations is that the dependents variables are the same and the number of explanatory variables is equal.

TABLE 2

GMFR OF THE MUSLIMS OF KANPUR CITY DURING 1967-70 AND 1970-73

	GMFR during		Percentage change
	1967-70	1970-73	
Occupational Muslim	237	221	-2.53
Non-occupational Muslim	231	222	-3.89
All Muslims	232	224	-3.44

The significance of beta coefficients of the regression model is tested by t statistics. The value of t also provides an idea about the relative importance of the invariable explaining the individual variation in the dependent variable.

Cumulative fertility of the Muslims was measured by the number of children ever born (CEB). It gives the total number of children who were alive at the time of birth, irrespective of the fact whether or not they are surviving at present. A number of indices like perceived economic benefit and felt burden of children, index of economic status etc., were made and used as independent variables. The methodology and procedure of their construction is given elsewhere.

Zero Order Correlation with Selected Explanatory Variables

Table 3 gives the correlation between the explanatory variables and CEB. All the correlation coefficients which exceed 0.14 for CM, 0.12 for NOM and 0.09 for AM are statistically significant at 5 per cent level of significance. It can be seen in the table that each explanatory variable, except the index of economic status is significantly related to CEB in at least one of the two groups of Muslims. However, the degree of association varies a great deal. Variables which appear to be more promising for explaining fertility variation and had relatively higher correlation with CEB are:

- 1 . *Age of women*: The older the woman the higher the number of CEB.
- 2 . *Duration of marriage*: The larger the duration of marriage, the larger the number of CEB.
- 3 . *Educational attainment of wife*: The more educated the woman, the less the number of CEB.
- 4 . *Age at marriage*: The higher the age at first marriage of woman, the lower the number of CEB.
- 5 . *Frequency of child death*: The higher the frequency of child death, the higher the number of CEB.

- 6 . *Sex preference of husband*: The higher the preference of the husband for male children, the higher the number of CEB.
- 7 . *Perceived burden of the children*: The higher the perceived economic burden of the children, the lower the number of CEB.

The significance of the correlation between fertility measures and the remaining explanatory variables further suggests that each variable has at least some explanatory effect. However, it is possible that in reality only a few explanatory variables are correlated with fertility and the remaining variables appear to be correlated because of their inter-correlation among themselves. To guard against such spurious correlation and misleading results, partial correlations which measure the explanatory effect of a variable controlling all other variables in the system, were calculated.

Table 3 also gives the net relationship, partial correlation between the explanatory variables and the number of CEB which were found significant at 5 per cent level of significance. All the above listed variables were partially correlated with the number of CEB in the total sample. In addition to this, four more explanatory variables were found to be partially correlated with CEB they are:

- 1 . *Index of H-W empathy*: The higher the index of H-W empathy, the higher the number of CEB.
- 2 . *Perceived economic benefit from children*: The higher the perceived economic benefit from the children, the higher the number of CEB.
- 3 . *Index of economic status*: The higher the index of economic status of the couple, the higher the number of CEB.
- 4 . *Sex preference of wife*: The higher the sex preference of the wife, the higher the number of CEB.

However, when the two groups of Muslims were taken separately, it was observed that some of the variables which had significant partial correlation with CEB in the total sample,

TABLE 3
ASSOCIATION BETWEEN CEB AND SELECTED EXPLANATORY VARIABLES —
ZERO ORDER CORRELATION COEFFICIENTS AND PARTIAL CORRELATION COEFFICIENTS

Variables	Zero order correlation coefficients			Partial correlation coefficients		
	OM*	NOM**	AM***	OM*	NOM**	AM***
Demographic variables						
Age of wife	.72	.59	.65	.65	.57	.58
No. of children died	.45	.50	.50	.55	.37	.32
No. of living children	.91	.79	.84			
Living number of sons	.68	.68	.68			
Socio-economic variables						
Education of Husband	-.23	-.18	-.24			
Education of Wife	-.38	-.35	-.39	-.18	-.15	-.18
Education of Couple	-.29	-.25	-.30			
Annual income	-.12	-.16	-.16			
Index of Economic Status	-.12	-.02	-.07		.23	.13
Perceived Economic Status	-.19	-.15	-.18			
Family variables						
Age at marriage (W)	-.38	-.23	-.30		-.19	-.14
Duration marriage	.76	.63	.69	.67	.43	.52
Index H-W communication	-.24	-.21	-.27			
Index H-W empathy	.16	.03	.03	.31	.13	.17
Exposure Mass Media	-.28	-.20	-.27			
Sex preference (H)	.36	.20	.27	.15		.10
Sex preference (W)	.16	.23	.24		.16	.10
Psychological variables						
Perceived burden	-.35	-.32	-.30	-.15		-.13
Perceived benefit	.29	.24	.29	.22	.21	.23
Perceived GMR	.10	.08	.11			

All zero-order correlation greater than or equal to .14 for OM, .12 for NOM and .09 for total sample are significant at 5 per cent level of significance Partial correlations are calculated by controlling all the variables simultaneously.

*Occupational Muslims; **Non-occupational Muslims; ***A11 Muslims

were insignificant in either of the two groups. For example, the partial correlation of CEB with age at marriage, index of economic status and sex preference of wife was not significant in the CM group. Similarly, felt burden of the children and sex preference of the husband were found partially uncorrelated and thus showed insignificant explanatory effect for variation in the number of CEB.

Multiple Correlation Coefficients

Different regression models were used to assess the explanatory effect of each of the above variables, independent of the rest and working simultaneously. The beta values of the best four regression models which explained the maximum proportion of all couple-to-couple variation in \CEB is given in Table 4. The variables could explain about 60 per cent of fertility variation in the total sample, about 73 per cent variation among the CM and about 52 per cent variation among the NCM.

As expected, the present age of wife and duration of marriage is the most important explanatory variable for fertility variation. Next to this is child mortality. It shows that high child death rate is one of the most important reasons for higher fertility. High child mortality affects both psychologically as well as physiologically in increasing the birth rate. Psychologically it increases the desire to have one or two more children than what they actually want to have, just to "make up" for probable future losses. Physiologically it reduces the duration of post—partum amenorrhea, during which conception usually does not occur. Potter observed that the absence of infant deaths increases the average length of amenorrhea from 10.8 months to 11.5 months and reduces the variance from 55 to about 50⁷. Similarly, Jain and Krishnamurthy found that breastfeeding increases the length of amenorrhea and thus prolongs the inter-pregnancy interval 8&9.

The third most important variable which affects fertility is the perceived economic benefit from children. It shows that perception regarding the economic utility has an appreciable net effect on family size. It also demonstrates that people have relatively larger family size not simply because of their ignorance as several' scholars claim but perhaps also because a large family in the present social

structure is still economically beneficial. Mamdani in his recent study of Manupur has very neatly demonstrated this point.

Education of women is yet another very important predictor of fertility behavior. Change in educational level of women is perhaps a more precise indicator of social change in the society than the education of males. Education leads, people to question traditional modes of thought and behavior. It also helps in change the style of life and helps women to participate more effectively in the affairs of the family. Similar other modernizing effects like changing economic attitudes and cost benefit considerations of children operate as intervening variables through which education affects fertility decisions indirectly.

Wife's age at marriage was negatively associated with CEB in the total sample and NOM group but it did not work as a predictor in the case of the CM.

Preference for male children by both husband and wife turns out to be an important explanatory factor for fertility variation in the total sample. However, the two groups differ in this respect. While among the CM, son preference of husband is a strong predictor of CEB, it is the son preference of wife which shows significant explanatory effect for CEB among the NOM. Son preference of wife in the case of CM and son preference of husband in the case of NCM does not work as an explanatory variable. The difference is quite understandable. Of the CM, the majority are self-employed. For them a son is an additional labor force and thus they have a strong bias for male children.

Perceived burden of children has no significant explanatory effect in the total sample and among NCM group but it shows a negative association with CEB in the case of the CM. In each regression model for OM and the total sample, index of H-W empathy is positively associated with CEB. Further, a highly significant beta coefficient in the regression models indicates that increase in H-W empathy as such does not necessarily reduce the birth rate. If the general norm of the society is for a large family, increase in husband-wife empathy may increase the number of births. H-W empathy has no explanatory effect in case of the NOM.

TABLE 4

CONSTANT TERM AND BETA COEFFICIENTS OF THE REGRESSION EQUATIONS FOR LIVE BIRTHS OF OCCUPATIONAL MUSLIMS,
NON-OCCUPATIONAL MUSLIMS, ALL MUSLIMS

	Occupational Muslims				Non-occupational Muslims				All Muslims			
	1	2	3	4	1	2	3	4	1	2	3	4
Constant	-.943	-.721	-2.934	-2.247	-2.261	-2.607	-2.599	-4.278	-3.449	+3.711	.854	-4.154
Present Age				.21 (9.66)	.19 (7.37)	.18 (6.84)			.21 (12.05)	.20 (11.35)		.20 (11.7)
Death of No. of Children	.63 (5.5)	.60 (5.45)	.63 (5.43)	.59 (4.97)	.78 (4.14)	.75 (3.99)	.79 (4.24)	.82 (4.24)	.67 (6.06)	.68 (6.22)	.69 (6.29)	.68 (6.29)
Duration of Marriage	.22 (10.83)	.21 (10.57)	.22 (10.34)				.18 (6.76)	.18 (6.49)			.20 (11.08)	
Age at Marriage			.09* (.93)	-.1* (1.15)	-.21 (2.25)	-.15 (2.28)	-.03* (.429)	-.04* (.610)	-.14 (2.72)	-.13 (2.51)	-.03* (0.62)	-.13 (2.50)
Index of H-W Communication									.02* (.670)			
Index of H-W Empathy	.17 (3.53)	.18 (3.94)	.18 (3.62)	.18 (3.81)				.11 (1.85)		.13 (3.12)	.13 (3.04)	.12 (3.07)
Index of Exposure to Mass Media				.05* (.808)		.02* (.234)						
Perceived Burden of Children	-.20 (1.81)	-.18 (1.64)	-.17* (1.49)	-.16* (1.38)				-.08* (.651)	-.01* (.102)	-.05* (.592)	-.11* (1.40)	
Perceived Benefit of Children	.25 (2.76)	.24 (2.70)	.27 (2.78)	.28 (2.90)	.36 (3.09)	.33 (3.01)	.34 (3.07)	.36 (3.14)	.31 (3.95)	.30 (3.98)		.31 (4.15)

Table 4 (Contd.)

	Occupational Muslims				Non-occupational Muslims				All Muslims			
	1	2	3	4	1	2	3	4	1	2	3	4
Perceived Economic Status			*.08 (.567)	-.21*	-.21* (1.30)	-.18* (1.13)	-.16* (.959)	-.03* (.183)				
Education of Husband					-.04* (.376)							
Education of Wife		-.27 (2.51)	-.35 (2.50)	-.31 (2.33)		-.30 (2.53)	-.28 (2.44)	-.15* (1.46)	-.30 (3.36)	-.33 (3.75)	-.34 (3.84)	-.33 (3.79)
Education of Couple	*-.07 (1.04)											
Index of Economic Status			*.01 (.270)		.09 (2.19)	.13 (3.13)	.13 (3.14)		.08 (2.98)	.07 (2.68)	.08 (2.94)	.07 (2.67)
Sex Preference of Husband	.26 (1.86)	.26 (1.96)	.24 (1.75)	.22 (1.59)				.17* (1.08)	.19 (1.75)	.17 (1.63)	.19 (1.71)	.19 (1.76)
Sex Preference of Wife			.02* (.201)		.26 (2.16)	.21 (1.74)	.21 (1.68)	.23 (1.75)	.13* (1.38)	.17 (1.85)	.21 (2.20)	.18 (1.93)
R ²	.730	.740	.745	.728	.512	.528	.522	.511	.601	.612	.592	.612
R ⁻²	.715	.726	.722	.708	.491	.506	.502	.485	.588	.600	.581	.601
Number of Variables	7	7	11	8	8	9	8	10	10	10	9	9

*Not significant at 5% level of significance. Numbers given in parenthesis are the 't' statistics of coefficient.

In the regression models for the total Sample and NOM, the index of economic status (CEES) has a weak positive relation with CEB. It shows that people of higher economic status may go for a relatively larger family. This is in contradiction to the uncontrolled raw data which showed a tendency of inverse relationship between IES and CEB. However, in Both the cases the relationship is quite weak. IES is unrelated with CEB in the case of the CM. Other variables like index of H—W communication, perceived economic status, perceived child mortality, annual income per adult etc.; did not show significant explanatory effect in either of the two Muslim groups or the total sample.

Conclusion

The present study demonstrates that for understanding the fertility behavior, due consideration must be given to the major social contours of the community. Even though the two groups of the Muslims in the present study were in the same income bracket, their fertility levels were different. At the end of their reproductive period, the OM had given one more live birth (8.2) than the NOM (7.1). The fertility differentials were mainly explained by the modernizing variables like education, type of the occupation, preference for male children, and felt burden of children. High frequency of child death among the Muslims also affects their fertility behavior.

It is also demonstrated that during 1967-73 the Muslim fertility had shown declining tendency. The decline was slightly more among the non-occupational Muslim group - the group which was relatively more 'modern' - than the occupational Muslim.

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AN ATTITUDINAL AND MOTIVATIONAL STUDY OF EARLY AND LATE ADOPTORS OF FAMILY PLANNING AMONG WOMEN

Pramod Kumar* and Lata Gairola**

ABSTRACT

The study attempts to examine the relationship between attitude toward family planning and motivational structure and early or late adoption of family control measures. The sample consisted of 53 early adoptors and 53 late adoptors of family planning measures among women. A Hindi version of attitude scale developed by Mukherjee (1971) and a motivational checklist were administered to the respondents individually. The results showed that the degree of positiveness of attitude toward family planning contributed to early or late adoption of family control methods. It was further observed that the strength of felt motives (and not the type) differentiated between early or late adoption of family control methods among women.

Why some women adopt family planning methods fairly early, even before the arrival of the first child, while others do so after getting many children? Is the time of adoption of family planning in any way related with their attitudinal and motivational structure? A close relationship between motivational pattern and early or late adoption of contraception has been reported by Kar¹. He has observed that the early acceptors than the late acceptors more frequently state improvement of social status, self-improvement and close family relationship. The late acceptors, on the other hand, more frequently mention economic and material betterment as dominant goals. The early adopters are also reported to be better educated,

*Reader in Psychology, Punjab University, Chandigarh.

**Research Fellow in Psychology University of Jodhpur, Jodhpur.

belonging to the middle or higher income groups and getting married at a later age as compared to the late adoptors of family control methods. It is also argued that the early adoption of family planning measures is practiced with a desire to achieve proper spacing in children while the late adoption is utilized as a means for limiting the size of the family³.

The present study, as a part of a larger project, attempts to examine the relationship between attitude toward family planning and motivational pattern and early or late adoption of family control methods among women. The hypotheses tested are:

1. There will be a significant positive relationship between attitude toward family planning and early adoption of family planning measures.
2. There will be a significant positive relationship between motivational structure and early adoption of family planning measures.

Method

The sample consisted of 53 early adoptors and 53 late adoptors of family planning methods among women. The early adoptor group comprised those women who had started using any method of family control before their third child. The late adoptor group included those women who started using any method of family control only after their third child.

Attitude Scale

A Hindi version of the attitude scale developed by Mukherjee for studying attitudes toward family planning was used. The scale consisted of 24 highly sensitive items - 12 favorable and 12 unfavorable with 'yes', 'doubtful' and 'no' response categories - selected following item-analysis. The Ss were fully assured that their answers would be kept *strictly* confidential as some of these items were of very personal nature. The scale was administered individually to each respondent. For the positive items, a 'yes' response was allotted a score of 3, a 'no.' response a score of 1, and a 'doubtful' response a score of 2. In the case of negative items, a 'yes' response was given a score of 1, a 'no' response a score of 3, and a 'doubtful'

response a score of 2. The attitude score for a respondent thus ranged from 72 showing a most positive attitude, 48 showing neither a positive or a negative attitude, and 24 showing - a most negative attitude toward family planning.

The split-half reliability (correlating the odd-even items) of the scale with female sample, after applying the Spearman-Brown prophesy formula, has been found to be .83 (N = 40) with .91 as an index of reliability. The scale has successfully differentiated between two female groups of 40 adoptors and 40 non-adoptors used as criterion groups for validating, the scale ($t = 3.96$; $df = 78$; $p < .01$).

Motivation Checklist: A list of 20 statements relating to six motives reported by earlier researchers as significantly affecting, the 'adoption of family planning was prepared 5&6.

This, list of statements was then submitted to a group of 10 judges (psychologists) "with a request that they should give their assessment as to which of the six motives appear to belong to the given statements. On the basis of their assessment, 10 statements were finally "retained which showed 100 per-cent agreement among the judges as to, the motives to which they belonged. Out-of these 10 statements, selected for the study three belonged to health, two to economic, one to -social three to family welfare, one to marital and one to nationals-motives,

The respondents were instructed to *check* by putting a tick (y) mark against these items which they thought had prompted them to adopt family planning methods. The checklist data were analyzed in terras of frequency distribution.

Results

Table 1 gives the relationship between the attitude toward family planning and early or late adoption of family "planning measures. The attitude towards family planning had been found to affect the time of its adoption among women ($t_ = 2.30$; $df=104$; $p < .05$)*., The obtained differential in attitude scores for the two groups showed that the women who held a more positive attitude toward family planning tended to early adoption of family planning than the women with less positive attitude toward, it.

Hypothesis 1: That there would be a significant positive relationship between attitude toward family planning and early adoption of contraceptive measures has been confirmed.

Table 2 gives the relationship between motivational structure and early or late adoption of family planning. A high positive coefficient of correlation ($\rho = .83$; $df = 4$; $p < .05$) Showed that the motives as such did not differentiate between early or late adoption of family planning among women.

TABLE 1
RELATIONSHIP BETWEEN ATTITUDE TOWARD FAMILY PLANNING AND EARLY AND LATE ADOPTION OF FAMILY PLANNING MEASURES

Groups	N	Mean	SD	SE _E	t	p
Early Adopters	53	65.15	6.76	1.30	2.30	.05
Late Adoptors	53	62.30	7.25			

TABLE 2
RELATIONSHIP BETWEEN MOTIVATIONAL STRUCTURE AND EARLY AND LATE ADOPTION OF FAMILY PLANNING MEASURES

Motives	<u>Early Adoptors</u> N-53 Per cent	<u>Late Adoptors</u> N-53 Per cent	χ^2
Health	71.0	50.31	$\chi^2=5.64$; $df=1$ $p < .05$
Economic	38.67	7.54	$\chi^2=22.22$; $df=$ $p < .01$
Social	58.47	28.30	$\chi^2=5.56$; $df=1$: $p < .05$
Family Welfare	67.0	39.62	$\chi^2=7.44$; $df=1$ $p < .01$
Marital	34.0	17.4	$\chi^2=3.00$; $df=1$ N.S.
National	17.4	15.09	$\chi^2=.05$; $df=1$; N.S.
$\rho = .83$; $df = 4$; $p < .05$			

Hypothesis 2: That there would be a significant positive relationship between motivational structure and early adoption of contraceptive measures could not be confirmed.

Further analysis of the data showed that it was the felt strength of these motives (and not the type of motives as assumed) which was responsible for early adoption of family planning among women.

Discussion

The study showed that the attitude toward family planning affected the time of its adoption among women. The women who went for early adoption of family planning measures showed a more positive attitude toward family planning than the control group. Studies in the area of attitude research have shown that a person who holds a positive attitude is more inclined to attend and accept any information which is congruent with his existing attitude with a view to collect further support for his attitude. He is also inclined to act accordingly, making his attitude internally more consistent 7, 8,9,10. The women who held more positive attitude toward family planning likewise showed a greater inclination to acknowledge and accept information that related with positive aspects of family planning and similarly an early adoption of family control methods than the women with less positive attitudes toward it.

The study further showed that the early or late adoption of family control measures was not affected by any differential in the type of motives among women. The results do not corroborate with Kar's findings¹. The motivational picture, however, became clearer when the strength of stated motives was analyzed. The analysis then showed that it was the strength of felt motives (and not the type of motives as hypothesized) which contributed to the early or late adoption of family control methods. The women who went for early adoption of contraception showed a stronger need for the betterment of health, family welfare, social status and economic standards of their families. The early acceptance of contraception was adopted as a *means* to the realization of strongly-felt goals by these women.

The study thus showed that we, as family planning men, should attempt to develop a more positive attitude toward

family planning among people as a strategy to make family planning more readily acceptable to them. This could effectively be achieved by linking family planning measures with the realization of strongly-felt goals, like health, family welfare, social status and economic betterment of one's family. A similar recommendation has also been made by Crawford, Stocker and Heredia.

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