

HEALTH USERS' OPINIONS ON IMPACT OF HEALTH SCHEMES: ANALYSIS OF ISSUES AND LESSONS FOR INTER-SECTORAL COORDINATION FOR IMPROVED GRASSROOTS HEALTH DELIVERY

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ABSTRACT

This article presents an analysis of the opinions of health users' regarding the impact of various health schemes have had on them. It particularly seeks to highlight the health services utilization pattern vis-a-vis the philosophy and provisions of primary health care, viz. availability, accessibility, appropriateness and affordability. While outlining the existing mechanisms of Inter-sectoral Coordination for Improved Management of the Grassroots Health Delivery System, the author lays emphasis on the need for matching the felt needs of the users with the programme plans and actions.

This article deals with 'Inter-sectoral Coordination for Improved Management of the Health Delivery System at the Grassroots Level', sponsored by the WHO (SEARO)" was carried out by the authors.

The objectives of the study included, among others, analysis of the health users' opinions in the study area regarding the impact of health schemes have had on them. Results of and discussion on the same constitute the core of this paper. It highlights the health services utilization pattern, even while drawing attention to the benefits derived and the problems faced by them. The paper attempts to underscore the existing mechanisms of and the need for improved inter-sectoral coordination at the grassroots level both for meeting the felt needs of the users and increasing the responsiveness of the health delivery system.

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STUDY AREA AND RESEARCH METHOD

The study was conducted in ten villages of Tenali Mandal of district Guntur, Andhra Pradesh.

The objective of any health delivery system, particularly in the context of meeting the felt needs of the people, is to programme, plan and reach the health services and inputs to those in need most at the household and village levels.

Therefore, it was considered important to assess the extent to which the stated objectives of the health system have yielded the intended results. Accordingly, a random sample of a 100 beneficiaries drawn from ten villages was interviewed. Extensive use of observation was made besides interviewing. Primary data was collected from both the health users and providers regarding availability, accessibility and appropriateness of the services as well as the socio-economic background of the users.

RESULTS AND DISCUSSION

Socio-economic Characteristics: Their Impact on Health of Respondents

i. Age: Agewise, majority (43.0%) of respondents belonged to the age-group of 36-45 years. About a third of all the respondents belonged to the higher age-groups i.e. 46-60 years and as many accounted for the younger age-groups i.e. less than 35 years (Table 1).

TABLE 1

DISTRIBUTION OF HEALTH SERVICES USERS BY AGE

S.No.	Age-Group (in years)	No. and % of Respondents
1.	18-25	16
2.	26-35	13
3.	36-45	43
4.	46-60	28
Total		100

Implications. The percentage of the 40 plus users implies that the problems of ageing need to be specially taken note of and matching health services offered. However, there does not appear any such special efforts in the

scheme of the sub-centre services. For example, most of the middle and higher age-group respondents mentioned in interviews that they could not get their problems of blood pressure checked owing either to the inability of the health workers to check BP or non-availability of any BP instrument at the sub-centre (SC) level. Lack of attention to their problems such as Arthritis was also mentioned by them. It is perhaps for these reasons that the utilisation of the SC services was reported very low by the respondents. This point is elaborated in the sections to follow. The other users said that while the health services were just about alright, the medical input/supply aspects leave a lot to be desired.

ii. *Family Size*: As regards the total size of the family, about two-thirds of all the respondents had family sizes, ranging from five to eight members (Table 2). About a quarter of them accounted for small families ranging from 1-4 members.

TABLE 2
DISTRIBUTION OF USERS BY SIZE OF FAMILY

S.No.	Family Size (No.)	No. and % of Respondents
1.	1-4	22
2.	5-8	63
3.	9-12	15
Total		100

Implications: This data would be very useful for planners in that the small family respondents could become the main targets for registration as eligible couples and extension of family welfare services. On the other hand, respondents with large families could be contacted for motivating them to adopt programmes of family planning and immunisation for small children and population education programmes for the grown-up children.

However, the existing PHC/SC level data collection, programming, monitoring and follow-up exercises do not appear responsive to the needs of the different categories of respondents as above. A large number of respondents, indeed, opined that there was a lack of 'total family health approach' on the part of the health staff. Therefore, there is need for the health staff to devise ways and means of using and collecting further data as above so as to make the health system as a need-based welfare service. The credibility as well as the efficiency of the present grassroot health delivery system, which is currently perceived as

low* by the health users, is bound to increase as a result.

iii. *Incomes*: Affordability being one of the four major pillars of the primary health care approach viz availability, accessibility, affordability and appropriateness, aspects relating to the economic status of the health users comes into sharp focus. The data shown in Table ,3 reveals that a significant chunk (15.0%) of the respondents accounted for the 'very low' income category, i.e. Rs.10,000 and less per annum per family.

TABLE 3
DISTRIBUTION OF USERS BY INCOME

S.No.	Income Range (Rs. per annum)	No. and % of Respondents
1.	Less than 10,000	14
2.	10,001-15,000	17
3.	16,000-20,000	57
4.	20,001-25,000	12
Total		100

Implications: This has serious implications in so far as the personal health of these respondents is concerned for such meagre incomes would mean just about Rs.150 per capita per month. Unable to meet even their basic food requirements as it were, could such respondents even think of apportioning at least a part of their incomes towards their health? It is common knowledge that the PHC/SC medical supplies position is discouragingly low. This fact was corroborated by our field data. Most users mentioned that 'the least that the doctors do in these conditions is to hand out a prescription so that the patients could buy medicine on their own'. The health authorities need to expressly translate their concern into action now. In particular, vulnerable groups of this kind should be offered special packages of health including health insurance.

Apart from the above, the health authorities in collaboration with the rural development and voluntary agencies also need to plan and implement income-generating activities so as to enable the poor to increase their incomes. This is particularly important in view of the fact that nearly two-thirds- of all the respondents belonged to the scheduled castes and scheduled tribes (Table 4) who generally pursued lowly paid agricultural occupations (wage labour and tenant

cultivation). Evidently, there is no gain saying the fact that such weaker sections cannot apportion any money for health activities unless their general income levels increased significantly so as to incur expenditures on non-food items like health.

TABLE 4
DISTRIBUTION OF USERS BY CASTE

S.No.	Caste	No. and % of Respondents
1.	Forward	10
2.	Backward	30
3.	Scheduled Caste	45
4.	Scheduled Tribe	15
Total		100

Economically, the other groups of respondents too, were none to comfortably placed to be able to afford the costs of health that are otherwise not met by the PHC/SC. Nearly two-thirds of all the respondents, though belonged to the relatively higher income categories i.e. Rs.16,000-20,000, yet they too faced the problems of affordability. However, since their per capita income was marginally higher, some of them mentioned that they somehow managed to consult the private doctors in the vicinity and also purchased some medicines from the local markets.

iv. *Health Care Costs, Ethics and Implications:* The authors would like to mention here in great pain the kind of unethical practices perpetuated by both the qualified and 'quack-type' of private doctors observed in the field as also the insights gathered from the interviews with the people and some social workers. Despite the fact that one is dealing with the health problems of the poor and rural folk, many allopathic doctors were found prescribing four to five medicines even for simple ailments such as cold, fever, etc. While intake of so many medicines by itself is harmful, the costs of the same are prohibitive. The new 'prescription culture' has led to a proliferation of drug stores and the growth of a frighteningly large number of formulations. It has also introduced distortions in the market prices of medicines as well as the professional competencies of doctors. This has not only implications for the growing cost of medicines but also spells disaster for the human immuno-system. For example, the indiscriminate prescription of chloramphenicol for any kind of high fever seems to have already done considerable damage to the poor in that their resistance levels (even in seemingly

confirmed typhoid problems) were said to be decreasing. Consequently, newer, more expensive and stronger drugs are said to be finding their way into the market only to further tax the poorman's pocket and also cause greater damage to his already damaged system.

Also, notwithstanding the problems of the poor and their low affordability as outlined, expensive packed protein foods (e.g. Protinules or Proti-vita), tonics, elektral (for diarrhoea instead of the proven ORT that can be prepared at home as per the UNICEF and WHO guidelines) etc. are also said to be prescribed for consumption of the poor by the *poorly informed doctors*. Little do they realise that there are many indigenous, cheaper and convenient alternatives to the same. For example, protein and energy rich foods like groundnuts, soya foods, ragi meals etc. can be recommended to the sick, weak and convalescing patients.

v. *Education and Literacy Status*: The respondents' educational background is also as discouraging as their income background. The assumption that low levels of literacy and education are usually a cause of low levels of income seems to be operating viciously in our study area. Table 5 shows that a majority (60%) of those interviewed accounted for 'illiterates'. Only about a third of them had acquired primary and middle level of school education.

TABLE 5
DISTRIBUTION OF USERS BY LEVEL OF EDUCATION

S.No.	Category of Education Level	No. and % of Respondents
1.	Illiterate	60
2.	Primary	20
3.	Middle	14
4.	Secondary School	6
Total		100

Implications for IEC Management: The foregoing discussion on the economic background and the associated problems of affordability, ill-suited health practices etc. when juxtaposed with that of the educational background of the respondents, assumes critical relevance. Firstly, this has implications for the health authorities to streamline their programmes of health literacy and education. The communication efforts in propagating messages of health and family welfare should increasingly reflect conscious attempts on the part of the health authorities

and other development agencies to utilise indigenous knowledge of the people and blend it with simple audio-visual packages that would enable people to adopt the health recommendations. For example, folk arts like puppetry, street dramas, religious discourses etc. can become powerful means of effective communication. Indeed, our field evidence showed that the temple priest could also act as a powerful change agent. Further, making use of trees and plants (e.g. Tulsi, Babul, Banyan) that are worshipped, could also be used as strategic points for displaying visual aids or for writing messages. In one of the villages, one also found that the adult literacy classes were excellent centres of communication relating to health. Apart from oral messages, Mango leaves (considered religiously auspicious when hung as garlands at the doorsteps on festival days) were used for writing up simple health messages with lime solution (mortar or chunna). Typically such messages included 'take bath', 'immunise', 'small family', etc. The point being made here is that the health educators should extend communication in a manner that would help receivers own the message, identify with it and adopt subsequently. The illustration of Mango leaves should be seen as instructive. Similar illustrations are available from the field areas of Kerala where the literacy base is strong. The Muslim priests are known to have innovated in communicating family planning messages by way of writing the same on *green cards*, for the green colour is considered religiously sacred. And hence it seems to have made sense to the people to continue to respect these message-filled cards and even display them at home. Not only did the families get to read the messages repeatedly but also helped the neighbours read the same whenever they visited the card holding families. This is in direct contrast to what happens when written messages are distributed to the people which are usually not read, and even if read, consigned to the dustbins soon after.

In the context of education, functional literacy and adult education in particular, and the crying need for inter-departmental sectoral coordination, there is need for imaginatively introducing simple but critical components relating to health and family welfare as a part of the general/informal curriculum. The departments of health, education, social welfare need to get together in framing such curricula. The department of social forestry would also do well by collaborating with these agencies in promoting religiously important species of plants and trees. As part of school health programmes in particular, the education and forestry departments should make special efforts to educate the children about the health and nutritious values of plants and trees as also help the children at the school and household levels to actually raise plants. Imaginatively, the extensionists could even think of naming the school and home grown plants after the children, their elders, domestic pets, etc. so that the children would take personal interest as well as pride in maintaining and promoting the same.

However laudable the objectives of the health delivery system may be,

what determines the translation of the objectives into workable programmes and activities that are meaningful and sustainable is the ability and efficiency of the health system in terms of its performance on the one hand and the perceptions, views and the impact of these programmes on the intended users on the other hand. Therefore, data were collected from the respondents on such dimensions as their awareness of and utilisation of the health infrastructure and services.

vi. *Awareness Levels and Implications⁴ for IEC Management* Table 6 shows the levels of awareness of the respondents as regards both the number and type of health programmes implemented in the sample villages. By and large, the programmes under implementation in the study area included family welfare, immunisation, MCH, health and sanitation and some national health programmes like malaria, TB, leprosy, lilaria. blindness, etc.

TABLE 6
DISTRIBUTION OF USERS BY LEVELS OF AWARENESS ABOUT HEALTH AND RURAL DEVELOPMENT PROGRAMMES

S.No.	Level of Awareness	No. and % of Respondents	No. and % of Respondents
		Yes	No
1.	Aware of health programmes implemented in the village	51	49
2.	Aware of rural development programmes implemented in the village	78	22

However, an analysis of the levels of awareness revealed that only 50 per cent of the total respondents were aware of implementation of the programme outlined. This has serious implications both in the sense of the personal health consciousness of the respondents as well as utilisation of available grassroot level health services. While the situation of low awareness may have risen partly due to the low levels of literacy and associated problems discussed in the foregoing, a major part of it is attributable to a lack of effort by the health dispensing agents, health educationists in particular. Field evidence shows that there is hardly any conscious attempt made by the sub-centre health staff to educate the villagers and create awareness in the users of the health delivery system, the PHC and the SC in particular.

The levels of awareness being very low as they are, expectedly, the utilisation pattern was also evidently low and irregular (Table 7). In specific terms,

questions such as utilisation of the visits of the multipurpose health workers (MPWs), utilisation of the sub-centre and PHC services and referral services were asked of the users. The MPWs are expected to deliver a variety of health services at the doorsteps of the villagers so that the concept of 'total health' is achieved. However, the data analysis revealed that nearly two-thirds of the respondents did not utilise the services of the MPWs. The reasons for non-utilisation of the MPWs services given by them included: (i) the MPWs hardly visited their doorsteps, not even once in two months; and (ii) when visited occasionally, the MPWs did not communicate with the users in a manner that appealed to them. Many interviewers said that the MPWs hardly spent five to ten minutes with them during their visits. Further, they added that the MPWs seldom gave them medicines as they themselves did not carry adequate medicines because of shortages at the SC/PHC levels. Another major reason for non-utilisation of the MPW services as reported by the respondents themselves was that, as already mentioned in the foregoing, they were not aware of the sub-centre services and consequently were not aware of the MPW visits system. Put all these together, one cannot but avoid visualising a dismal state of affairs of village health in general and that of the working of the MPW household visit system in particular."

TABLE 7
UTILISATION PATTERN OF SUB-CENTRE SERVICES BY
USERS

S. No.	Utilisation Pattern	No. of Respondents Yes	No. of Respondents No
1.	Utilisation of doorstep MPW visits	39	61
2. (a)	Utilisation of SC services	38	62
2.(b)	If yes, do you use the services regularly	27	73
3.	Utilisation of PHC and referral services	27	73

Note: Multiple Responses are shown here.

* For a detailed account of the working of the MPW scheme and the problems facing both the scheme, the people and the MPW themselves, please see: (P. Durgaprasad and S. Srinivasan, 'Management of Rural Health Care Delivery System: Role and Performance of Grass root Level Health Personnel', NIRD (Book), Hyderabad, 1993.

Inadequacies in PHCs and SC. The sub-centre (SC), considered as the 'cutting edge*' for health delivery at the grassroots level, has apparently not made any significant impact on the rural health scenario. Often, one heard from the villagers that they did not even know where the SC was located in the village. And two sub-centres visited by mis research team did not even have a name board for the SC. Moreover, three sub-centres were found to be located in very poorly maintained thatched rented houses. Add to this, only two sub-centres were in proper condition and had facilities for staff housing. However, it is a different matter that the staff houses were underutilised or not utilised at all. The staff in many a village often chose not to stay in the PHC/SC staff quarters either because the living conditions there were very poor or they felt more comfortable in commuting to their work place on daily/weekly basis. The reason why this point is belaboured is that the MPWs, in the process of what has been outlined, have lost the vital contact with the village and the people. Their fieldwork carried little conviction. Consequently, this seems to have distanced the staff and users, and as a result, the field staff carried a low image in the eyes of the people. It is perhaps for this reason that even those respondents (38%) who said they have utilised the services, did not make use of either the SC or MPWs services on a regular basis. Only 27 per cent reported regular utilisation of the SC, PHC and the referral services.

As a consequence of the above, on the whole, nearly two-thirds of all the respondents opined that the services of the sub-centres were not 'satisfactory at all'. However, a quarter of them said that the services were just about 'satisfactory', while a small percentage of them considered the SC services as 'good' (Table 8).

TABLE 8
OPINIONS OF THE RESPONDENTS ABOUT THE FUNCTIONING OF THE
SUB-CENTERS

S.No.	Category	No. and % of Respondents
1.	Good	8
2.	Satisfactory	25
3.	Not Satisfactory	59
4.	SC not functioning at all	8
	Total	100

In the context of the poor health conditions in the villages; unsatisfactory level of SC services; lack of credibility on the part of the health staff; i.e. MPWs, VHGs and supervisors; near absence and or widespread dormancy of the people's health committees and the lukewarm attitude of village panchayats together, raise disturbing questions as to how the village health conditions and that of the people in particular are/can be taken care of. While it is true that a significant number of health problems remain totally unattended to or partly attended, fortunately, there still are available some health facilities both within the village and nearby. The few village level health services usually come from the village private health practitioners, some of whom are qualified practitioners and many are quacks. These doctors offer them basic health services at the village level. Also available in the villages are the services of the practitioners of Indian medicine, namely, Ayurveda and Siddha. Homoeopathic medicine also finds a significant place. In the light of this, one needs to review the relevance of the existing government health system which is pre-dominantly allopathic. Though services of the other systems of medicine are also envisaged under the PHC system, their availability is low and the utilisation of the services by the people is also low. Indeed, it was surprising to note that a doctor of the Indian medicine was perforce practising allopathy in one of the field study areas.

Of particular interest for the grassroots level health interventionists in the context of what has been said above is how best can one evolve a health system that is efficient, accessible and affordable? Can we streamline the existing government health system to provide good basic health services at the village level and efficient referral service to the town and city levels at a cost that is affordable? The answer is yes. There are ways to overcome the hurdles of both finance expertise and infrastructure. To begin with, we need to streamline the SC and PHC services both by way of reorienting the existing staff as also by professionalising the existing paramedics through training and additional incentives so that a new breed of paramedics would be available for manning the rural health services. In so far as financing rural health is concerned, the State should consciously and firstly allocate higher budgets (presently the State spends less than 4 per cent of its total development budget on health) to improve the health infra-structure. Simultaneously, efforts also need to be made to introduce a system of health insurance. The voluntary organisations, cooperatives and similar village level institutions should be encouraged to initiate health financing schemes like pre-payment schemes, grain banks, thrift schemes, insurance, etc. The voluntary organisations in collaboration/coordination with schools, youth clubs, etc. could mobilise collection of unused medicines from the households so as to supply them to the poor and thereby take care of the problems of affordability by the poor. The activities of the Medico-Fried circle, Kerala and Maharashtra, the Jamkhed Rural Service, the health cooperatives promoted by the Ford Foundation and the Tribhuvandas Foundation (Amul) An and and that of the Voluntary Health

Association of India (VHAI) in this connection are instructive and worth emulation by others. The idea of inter-sectoral coordination for improved health could come by only through such measures.

As regards, referral support services and super-speciality services, the State in collaboration with the political bodies and other activities groups should impress upon the big hospitals to earmark at least 30-40 per cent of their services for the poor, both urban and rural. Simultaneously, efforts should also be made to move/locate the super-speciality hospitals to the farmers/large villages.

Table 6 also shows, that the level of awareness of the health users as regards the implementation of rural development programmes was high (78%). When probed further, the interviewees said that the rural development (RD) programmes being tangible, made more sense to them and added that the extension staff of the RD programmes interacted with them more closely and offered fairly regular follow-up services. This seems to be in direct contrast to that of the quality of the health services offered.

The Panchayati Raj Institutions at the village level, entrusted as they are with partial, responsibility of implementing the Rb programmes, seem to be offering a relatively better level of coordination in successful implementation of RD. Whereas, when it comes to health, the village Panchayat does not appear to be showing sustained interest. Often, the Panchayat coordination begins and ends with a meeting with the PHC/SC staff. Occasionally, the Panchayat discusses in its meetings problems of village health. However, unfortunately, no follow-up is initiated, even though the panchayat has a standing committee for health that comprises the ward representatives within the village. Sadly, what is lacking is an effective people's health committee. The ones that exist in some villages are usually dormant. It is for this reason that over three-fourths of all the respondents were not aware of the existence of health committees in the study villages (Table 9). In contrast, the development (RD) committees seem to be functioning satisfactorily. Nearly 50 per cent of the respondents said that they were aware of the village and People's Development Committees. Field evidence indicates that a significant number of the IRDPs are functioning well.

Based on the foregoing, one may conclusively say that the People's Health Committees are either absent or are dormant. Therefore, the health staff in collaboration with the Panchayati Raj Institutions, Schools and Voluntary Organisations need to evolve suitable people managed health committees. Then alone, the philosophy of the primary health care approach i.e. "putting the instruments of health into the hands of the people" will bear fruit.

TABLE 9
DISTRIBUTION OF BENEFICIARIES BY LEVEL OF
AWARENESS ABOUT PEOPLE'S COMMITTEES

S. No.	Level of Awareness	No. and % of Respondents Yes	No. and % of Respondents No
1.	Aware of People's Health Committee	14	86
2.	Aware of Village Development Committee	48	52
3.	Aware of Mandal Level Coordination Committee	7	93

Note: Multiple responses are shown here.

User's Suggestions for Promotion of Inter-Sectoral Coordination

Coming to the point of view of the respondents regarding interdepartmental and sectoral coordination, most of them said that they would ideally like all the health related departments to dovetail their activities both amongst themselves and the villagers better. Further, they added that coordination was particularly important now because integration of health services with those of development is being increasingly sought to be promoted. However, the past experiences of a large number of beneficiaries interviewed, were particularly discouraging, for, they said that, for example, the Media Officers and Extension personnel conducted family planning communication campaigns without coordinating their activities with others. By and large, actual family planning operations took place long after the said family planning campaigns were held. The result was that the information given had evaporated by that time and that the voluntary agencies and the Civil Supplies Department which had promised help during and after the family planning operations could not/did not do so mainly because of the long time lapsed between the two sets of activities.

Similar experiences were narrated by the beneficiaries in some other villages, especially women belonging to the weaker sections. The Department of Social Welfare in collaboration with the Department of Labour had chalked out a programme for offering relief to the expectant mothers belonging to the scheduled castes and scheduled tribes. The targeted women usually included the poor agricultural and construction labourers. It envisaged a cash support of Rs.900 to

each pregnant women so as to compensate for their wage losses as also enable them to buy some nutritious food. The first instalment was to be given in the 8th or 9th month; second one after delivery and the third one after fully immunising the newborn. Highly laudable this scheme is, but its management is very poor. A major part of the failure is attributable to a lack of inter-sectoral coordination. Several women beneficiaries belonging to the weaker sections brought to our notice that they were either totally denied of the benefits of the scheme, especially meant for them as elaborated in the foregoing or there were inordinate delays in gaining access to the said benefits, primarily because (i) the health workers did not submit their pregnancy status papers to the concerned authorities or submitted the same very late; (ii) the Social Welfare and Labour Welfare functionaries did not process their cases at all or have processed it late; (iii) the health department itself did not seriously pursue and follow-up their cases with the Social Welfare Department; and (iv) even when conditions as listed in items (i) to (iii) were fulfilled, the concerned departments either insisted on production of pregnancy registration and birth certificates (which are often difficult to obtain either due to the ignorance of the poor or cumbersome administrative procedures). More importantly, such certificates cannot be obtained easily for the simple reason that most poor women labourers do not/cannot register their pregnancies because of the nature of their occupations or because most deliveries (90%) take place at home. As a result, it was reported that quite a significant number of people did not receive the said benefits.

The lessons that are noteworthy from the above are that the different development sectors need to imaginatively coordinate their programmes better. Of particular significance is the need to streamline the administrative procedures in administering important programmes for the rural poor such as the ones outlined. If only the health and other welfare agencies had shown even a semblance of compassion and efficiency, many more women would have benefitted under the cited scheme.

Lkkjk'k

प्रस्तुत लेख में विभिन्न स्वास्थ्य योजनाओं के परिणाम स्वरूप सेवा प्रयोजनाओं पर पड़ने वाले प्रभावों के बारे में उनके मतों का विप्लेषण किया गया है। प्रस्तुत लेख में स्वास्थ्य सेवाओं की उपयोगिता के परिप्रेक्ष्य में प्राथमिक स्वास्थ्य परिचर्या सेवा अर्थात् इन सेवाओं की उपलब्धता, सुलभता, उपयुक्तता तथा वहनीयता पर खासतौर से प्रकाश डालने का प्रयास किया गया है। उन्नत प्रबन्धन के उद्देश्य से निचले स्तर की स्वास्थ्य सेवा वितरण प्रणाली का खाका प्रस्तुत करते हुए लेखक द्वारा इन सेवाओं के प्रयोक्ताओं द्वारा अनुभूत आवश्यकताओं और कार्यक्रम योजनाओं तथा कार्यवाहियों को तदनुकूल बनाने के लिए इन्टर-सैक्टरल समन्वय पर विशेष बल दिया गया है।

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SUPPLY OF IODISED SALT AND ITS IODINE CONTENT IN HIMACHAL PRADESH, INDIA

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ABSTRACT

This study attempts to assess the status of supply of iodised salt and establish the profile of iodine content in iodised salt in Himachal Pradesh.

In Phase I, the secondary data on implementation of National Iodine Deficiency Disorders Control Programme was collected and analysed. In Phase II, 424 salt samples were collected from beneficiaries at district, block, village and traders levels of the six districts selected using multi-stage sampling procedure. The study suggests that the quality of salt entering and being distributed in the State may be monitored and strict enforcement of laws for prevention of food adulteration to ensure that salt with adequate quantity of iodine is available to the beneficiaries.

Distribution and consumption of iodised salt in Iodine Deficiency Disorders (IOD) endemic areas is the most cost effective strategy for controlling the same. However, despite the existence of the National Goitre Control Programme (NGCP) in India since 1962 no significant dent has been made on the prevalence of IDD even in the States/areas originally brought under the programme like Himachal Pradesh (HP)^{1,8}. One reason for the low impact is ineffective implementation of National Iodine Deficiency Disorders Control Programme (NIDDCP) particularly with respect to quality of iodised salt which is being supplied to the public.

The Prevention of Food Adulteration Act in India stipulates that iodised salt should contain a minimum of 30 ppm iodine at the manufacturers level and 15 ppm iodine at the consumer level. The Government of Himachal Pradesh has banned the sale of non-iodised salt in the State to ensure exclusive use of iodised salt.

No systematic study has been conducted till date in Himachal Pradesh to establish the status of supply of iodised salt and its iodine content.

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OBJECTIVES

The present study was conducted: (i) to assess the status of iodised salt supply in Himachal Pradesh; and (ii) to establish the profile of iodine content in iodised salt. Intervention measures to strengthen IDD control activities in Himachal Pradesh could emerge from the study.

RESEARCH METHODOLOGY

The study was conducted during November and December 1992. Secondary data were obtained on iodine deficiency disorders and the status of supply of iodised salt in Himachal Pradesh. Salt samples were collected from the traders and organisers in six selected districts of Shimla, Kangra, Mandi, Hamirpur, Solan and Una. The latter two were border districts of Himachal Pradesh with Union Territory of Chandigarh and Punjab State respectively. In each district one block, in each block, 2 PHCs and in each PHC, 2 sub-centres were selected using purposive sampling, for the collection of salt samples.

In each sub-centre salt samples were collected from 15 households by home visits. Samples were also collected from traders at district, block and sub-centre village level markets.

The salt samples collected were analysed using the standard iodometric titration method⁶. Ten per cent of samples were sent to the Indian Council of Medical Research (ICMR) iodine testing laboratory for quality control.

RESULTS

Status of Supply of Iodised Salt

It was found that the annual requirement of salt for the State of Himachal Pradesh was 30,000 tonnes (@ 5 kgs. per person consumption per year) and accordingly the Salt Commissioner, Government of India (GOI), allocated an annual quota of 30,000 tonnes. It was found that out of the total annual quota allocated by the Government of India only 4,000 tonnes of salt was procured by the State while the remaining requirement of salt in the State was met from other sources, *e.g.* private manufacturers and repacker units. The approximate amount of salt received in Himachal Pradesh from other sources was as follows: (i) iodised salt produced by General Industrial Corporation, district Solan, Himachal Pradesh (a State Government Undertaking) (1,500 tonnes); (ii) iodised salt produced by private manufacturers in Himachal Pradesh (10,000 tonnes); (iii) iodised salt produced from private manufacturers outside Himachal Pradesh (8,000 tonnes);

and (iv) iodised salt from private repacker units outside Himachal Pradesh (8,000 tonnes).

Results of analysis of salt samples collected by the food inspectors of health department during calendar year 1990-1992 revealed that out of 404 samples collected, only 33 (9%) were found having less than 15 ppm of iodine (Table 1). Also, in three districts less than one sample per month was collected.

TABLE 1
RESULTS OF SALT SAMPLES COLLECTED BY HEALTH INSPECTORS DURING 1990-1992

	1990		1991		1992*	
	No. of samples collected	No. of samples <15 ppm Iodine	No. of samples collected	No. of samples <15 ppm Iodine	No. of samples collected	No. of samples <15 ppm Iodine
Shimla	4	Nil	11	2	2	Nil
Kangra	63	7	67	8	39	2
Mandi	33	2	28	1	28	2
Hamirpur	7	2	8	1	8	3
Solan	21	0	12	0	17	1
Una	5	1	8	1	10	Nil
Total	133	12	134	13	104	8

*Upto November, 1992

Iodine Contents of Salt Samples

A total of 424 salt samples (173 crystalline and 251 powdered) were collected from 326 households and 98 traders.

The results of iodine estimation in salt revealed that 188 (44%) of total samples had an iodine content of <15 ppm and the 236 (56%) had an iodine of >15 ppm. Further analysis showed that 60 per cent of the crystalline salt samples and 33 per cent powdered salt samples had an iodine content of <15 ppm (Refer Tables 2 and 3).

Distribution of salt samples at trader and household level according to

iodine content has been given in Table 2. The mean iodine content of salt samples collected at the trader level was significantly higher ($p < 0.05$) as compared to the mean iodine content of salt samples collected at the household level. The low iodine content of salt in samples collected from households was possibly due to losses of iodine incurred during prolonged storage at home in open containers which was a common household practice.

Iodine content of powdered and crystalline salt at trader and household level has been given in Table 3.

DISCUSSION

The present study revealed that inadequate amount of iodised salt was procured by Himachal Pradesh from the allocated quota of 30,000 tonnes sanctioned by the Government of India. The remaining requirement of salt of the State was met from other sources. This was mainly due to non-lifting of iodised salt by the traders who found that iodised salt from other sources was available at a cheaper rate and hence was more profitable to them.

The iodine content was lower in a higher percentage of crystalline salt samples as compared to powdered possibly due to poor packaging of crystalline salt which was done in hand stitched high density polyethylene (HDPE) bags and stored under adverse conditions.

Fifty-six per cent of salt samples collected at traders level had an iodine content of <15 ppm. However, only 9 per cent of the salt samples collected under Prevention of Food Adulteration Act contained iodine <15 ppm even though majority of the salt samples collected were of powdered salt from the low density polyethylene packets (LDPE) from which losses of iodine are minimal (Table 4). This indicated low priority given to monitoring the quality of salt.

The findings of the present study indicate that the beneficiaries in Himachal Pradesh are receiving salt with inadequate quantity of iodine which is a possible reason for continuation of high prevalence of IDD in the State. An earlier study conducted also revealed that salt with an inadequate quantity of iodine entered Himachal Pradesh through neighbouring States⁷.

The results of the present study highlight a need for strengthening of the infrastructure for monitoring the quality of salt being supplied by the traders to the public. There is also a need for strengthening of the PFA machinery to ensure that salt with an adequate quantity of iodine is sold in the market.

TABLE 2
DISTRIBUTION OF SALT SAMPLES AT TRADER AND HOUSEHOLD LEVEL
ACCORDING TO IODINE CONTENT

Level	No. of Salt				Iodine Content		
	Sample n	No.	%	<15 ppm Mean±SD	No.	%	>15 ppm
Trader	98	55	56.1	^a 6.65 ± 8.4	43	43.9	^b 42.59 ± 18.7
Beneficiary	326	133	40.8	^c 5.35 ± 5.11	19	59.2	^d 34.82 ± 17.14
Total	424	168	44.3		236	55.6	

% of Rows

b vs d: p < 0.05

TABLE 3
IODINE CONTENT OF POWDERED AND CRYSTALLINE SALT AT TRADER AND HOUSEHOLD LEVEL

Iodine content	POWDERED SALT					CRYSTALLINE SALT				
	Traders		Household		Total	Traders		Household		Total
	(n = 33)		(n = 218)			(n = 65)		(n = 108)		
	No.	Mean± SD	No.	Mean ± SD		No.	Mean ± SD	No.	Mean ± SD	
<15 ppm	15	0.67 ± 4.84	68	5.70 ± 5.67	83 (33.1)	39	6.29 ±5.73	65	5.25 ± 4.83	104 (60.1)
>15 ppm	18	31.31±13.29	150	34.06±16.96	168 (66.9)	26	32.43±21.70	43	35.16±17.79	69 (39.8)
Total	33		218		251 (100.0)	65		108		173 (100.0)

Figures in brackets percentage of columns

TABLE 4
IODINE CONTENT OF SALT SAMPLES OF THE PRESENT STUDY AND SALT
SAMPLES COLLECTED BY THE PFA INSPECTORS

Iodine content	Present study (trader level) salt samples (n = 98)		State Government (PFA data)* 1990 to 1992 (n = 371)	
	Number	Percentage	Number	Percentage
<15 ppm	55	56	33	9
>15 ppm	43	44	338	91

*Majority of samples were collected from LDPE packets.

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प्रस्तुत लेख में हिमाचल प्रदेश राज्य में आयोडीन युक्त नमक की आपूर्ति और नमक आयोडीन की मात्रा के स्तर की जांच करने का प्रयास किया गया है। अध्ययन के प्रथम चरण में आयोडीन न्यूनता विकार संबंधी राष्ट्रीय कार्यक्रम के क्रियान्वयन संबंधी गौण आंकड़े एकत्र करके उनका विश्लेषण किया गया है। अध्ययन के दूसरे चरण में मल्टी-स्टेज सैम्पलिंग विधि से राज्य के छः चुने हुए जिलों से जिला, ब्लाक, ग्राम और व्यापारियों के स्तर पर लाभार्थियों के नमक के 424 सैम्पल एकत्र किए गए थे। अध्ययन में यह सुझाव दिया गया है कि पर्याप्त मात्रा में आयोडीन युक्त नमक उपलब्ध कराने की आवश्यकता को ध्यान में रखते हुए राज्य में लाए जा रहे और वितरित किए जा रहे नमक की गुणवत्ता पर कड़ी निगरानी रखी जानी चाहिए और खाद्यान्त अपमिश्रण नियमों को सख्ती से लागू किया जाना चाहिए।

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CONTENT ANALYSIS OF FILM MESSAGES ON FAMILY WELFARE AND AUDIENCE REACTIONS

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ABSTRACT

This study attempts to find out the family welfare messages disseminated through documentary films on family welfare and the comprehension of the messages by a village audience in District Puri, Orissa. The investigation was conducted in two parts, i.e., analysis of message and audience reactions. For message analysis, four films and for audience reactions analysis 50 villagers were selected through simple random technique. The economic issues and socio-cultural issues were, emphasised more in comparison to agricultural issues, population and health issues of general population problems in these films.

In a communication process central position is occupied by the content. Through communication process the people are informed and persuaded to change their behaviour. The role of mass media in developmental programme has been well established. In the absence of the basic information and knowledge, there could have been hardly any use of the service organizations. Following communication barriers have been identified by Indian communication experts: (i) diversities in culture and language; (ii) low literacy and income; and (iii) inadequate reach of mass media in rural community. It is important to design different messages for different target audiences, keeping in view their socio-cultural affiliations, attitude and the change sought in their behaviour.

By communication content is meant that body of meanings through symbols (verbal, musical, pictorial, plastic, gestural) which makes up the communication itself. Following are the six characteristics of content analysis: (1) it applies only to social sciences generalizations; (2) it applies only or primarily to the determination of the effect of communication; (3) it applies only to the semantic dimensions of language; (4) it must be "objective", "systematic" and

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"quantitative" According to Berelson (1952)² "Content analysis is a research technique for the objective, systematic and quantitative description of the manifest content of communication".

Regulation and control of fertility is essentially an individual decision and it is taken by the individual at his own level, usually in consultation with some significant persons. A significant role can be played by communication media in hastening this process of change in the individual. Family welfare messages are communicated through film medium to impart information and to motivate individuals. It has been recognised by communication experts that message should be framed according to the need of the target group. As the message plays crucial role in communication, it is therefore important to study the contents of family planning mass media messages, which is being disseminated through documentary films.

REVIEW OF LITERATURE

Banerjee (1978)⁸ conducted a study in two villages of Saharanpur district (U.P.) to find out the effectiveness of films as a medium for delivering family planning messages to rural audience. The sample chosen consisted of 70 persons. Seven films were selected in which different arguments for family planning like economic reasons, reasons related to health and family welfare and national welfare were presented. It was concluded that there should be a search for alternative media which should be able to involve participation and film can function as a supportive system of communication. The study indicated films should be related to the particular needs and appeal to the audience for whom they were intended.

NIHFW (1985)¹³ was entrusted with the task of content analysis of mass media messages in family welfare programme by Ministry of Health and Family Welfare, Department of Family Welfare, Government of India. This collaborative study was conducted in the States of Bihar, Gujarat, Orissa, Karnataka, Maharashtra, Tamil Nadu and Uttar Pradesh. 28 documentary films were analysed with the help of content analysis instrument developed for the purpose. Each family welfare communication, which was content analysed was also presented to 418 individuals drawn randomly from the rural/slum areas, and these audiences were asked individually, to react to different aspects of communications. The responses of audience were recorded on a structured interview schedule developed for the purpose. On the basis of findings on message-analysis and audience reactions, following recommendations were made to improve the messages on family welfare. (1) The coverage of agricultural issues, in addition to other issues may also be emphasised in the messages, (ii) Messages pertaining to IUD and Oral Pills may be covered and emphasised. More specific details of

different family planning methods may be covered. More messages to counteract the misbelief and rumours associated with different family planning methods may be included in films on family welfare, and (iii) Use of rural dialects may be emphasised more than the use of urban dialects in films on family welfare.

Misra (1975) found that films and posters were not the right media to convey family planning messages to those who know something about the programme; they were more effective with those who did not know anything about family planning. A study of villagers by the Family Planning Communication Action Research Project, Lucknow (1974) revealed that films on family planning were able to convey family planning messages to the people "quite effectively". The All India Institute of Hygiene and Public Health, Calcutta expressed a different view in 1962. According to its study, the role of films in relation to family planning was extremely limited.

On the contrary Donald J. Bogue made the observation, on the basis of his survey of the Indian situation that documentary films provided the only satisfactory medium for conveying family planning messages to people in India. The Indian Institute of Public Opinion conducted a survey of people's attitude towards family planning in eleven cities in 1967. According to this survey, seven out of every ten persons interviewed had become aware of family planning through films. National Institute of Health and Family Welfare (1985) conducted a study to measure the family planning media reach and effectiveness in India. It was found that reach of film medium was fairly high (*i.e.* 59%). However, family planning films had not been seen by many; only 23 per cent respondents recalled having seen them. 84 per cent of all those who had seen family planning films said that the messages were "generalised", stressing the need and importance of family planning without elaborating either explicitly. While reviewing the audience studies, Kakar (1987) stated that very often one family planning communication study contradicts another or fail to throw up enough light, through its findings, on the relative behaviour of the formats and nuances of the communication medium it seeks to analyse in terms of their impact on the audience. Bertrand (1971) described the procedures involved in the pretesting of communication material for films. Bertrand premised that the more attractive, comprehensive, acceptable and self-involving communication was, the greater was its potential effectiveness (persuasiveness). Binford, while analysing the family planning films stated "whether you or I judge these films to be 'good' is obviously less relevant than the response of the audience for whom the films are intended, and of this we know very little". Mukhopadhyay (1988)¹¹ stated that 90 per cent of the total media budget is spent for the garish and vulgar entertainment of less than 25 per cent of the population.

From the review of literature, it was found that there are few studies on

content analysis of family welfare communications. Most of the studies dealt with conceptual framework and were suggestive in nature without empirical evidence(s). They did not assess the impact of various family planning messages and to develop simple effective messages.

OBJECTIVES

The present investigation was conducted to analyse the family welfare related messages disseminated through films. The audience reactions to the family welfare messages and the extent to which audience understood the messages was also examined.

MATERIALS AND METHOD

Sample

The sample for the study was drawn from ten documentary films on family welfare widely screened in District Puri, Orissa. Four films were selected through simple random technique. For each film, 15 viriage community members were selected through simple random technique. Thus a sample of 60 community members was drawn from the 145 couples residing in a village of District Puri, Orissa.

Instrument

Content analysis instrument was used for message analysis. Content analysis instrument consisted of items on substance (what is said), form of expressions (How the message was said) and quantity (duration). An interview schedule was used to elicit audience reactions on the respective films.

Procedure

The investigation was conducted in two parts i.e. message analysis and audience reactions analysis. Film messages were translated from Oriya language to English language by a competent translator, for message analysis. Message analysis was done by the investigator with the help of content analysis instrument.

Each of the films was screened before the 15 members of the village community in a closed room for audience reaction analysis. After screening of each film, the member of the audience was interviewed individually by the local investigator with the help of a schedule.

RESULTS AND DISCUSSION

a. Message Analysis

The content analysis of the family welfare messages was carried out in terms of its substance (what is said), forms of expression (How the message was said) and quantity (duration). Out of total 56 messages, there were 26 messages under the general population problems and 30 messages contained motivational contents.

i. *Subject Matter of the Messages:* The family welfare messages were analysed in terms of their linkages with various socio-cultural and economic issues. Under general population problems, various issues related to disadvantages of large family and advantages of small family were analysed.

For emphasising the general population problems the messages presented economic issues, increase in population, agricultural issues, socio-cultural issues and health issues. The details of subject matter of the messages have been given in Table 1. Deterioration in family economy was emphasised in three films; and shortages of food; hunger; famine, shortages of houses were presented in two films. Shortages of clothing and decrease in standard of living were presented in one film. Other specific aspects of economic issues *i.e.* increase in cost of living; unemployment etc. were not covered in the messages. Population size and overcrowding aspects were presented in one film. Agricultural issues *i.e.* shortage of agricultural land was presented in one film. Socio-cultural issues *i.e.* mental tension, neglect of children, family quarrels and early marriage were presented to convey the disadvantages of large family size. Shortage of health facilities, deterioration of mother and child health were presented in two film messages, to establish linkages between health issues and family welfare. Traditional and orthodox barriers to family planning *e.g.* mother-in-laws who opposed family planning, and preference for son had not been included in the themes of the films. Educational issues (*i.e.* shortage of school, illiteracy, cost of education and deterioration in the quality of education etc.) were not presented in any of the four films. References to agricultural issues and increase in population to convey the family welfare messages were made in one film only.

Specific aspects of population problems were analysed in terms of their level of appeal. Level of appeal referred to the target audiences to whom the message was addressed. In most of the messages, individual, family and national level of appeals were used. Films aimed at the national level, on the assumption that people will recognise their welfare as dependent on the nation's welfare, and will consequently make a personal decision on this basis. It has been observed that audiences do not identify themselves with the messages containing national

level of appeal. The subject matter of various messages on population problems were analysed according to the type of appeal used. Predominantly, intellectual type of appeal was used in two films, humorous type of appeal was used in one film and emotional appeal was applied in one film. Films applying emotional type of appeal are suitable for rural population while films applying intellectual type of appeal are suitable for literate population.

TABLE 1
DISTRIBUTION OF MESSAGES BY SPECIFIC ASPECTS OF GENERAL POPULATION PROBLEMS

	General Population Problems	Specific Aspects	No. of Messages	Per- cent age
1.	Economic Problems	i. Deterioration in Family Economy	3	11.54
		ii. Shortage of food/hunger/fam	2	7.69
		iii. Shortage of home/shelter	2	7.69
		iv. Shortage of clothing	1	3.85
		v. Decrease in standard of livi	1	3.85
2.	Increase in population	i. Population size	1	3.85
		ii. Overcrowding	1	3.85
3.	Agricultural Problems	i. Shortage of agricultural land	1	3.85
4.	Socio-cultural Problems	i. Family quarrels	2	7.69
		ii. Mental tension	2	7.69
		iii. Neglect of children	2	7.69
		iv. Early marriage	2	7.69
5.	Health Problem	i. Shortage of health facilities	2	7.69
		ii. Deterioration of mother's hearth	2	7.69
		iii. Deterioration of child's health	2	7.69
		Total	26	100,00

Regarding specific messages on family planning methods only nirodh was covered in one film. No other family planning methods were presented in other three films. Only three specific aspects of nirodh i.e. what it is and how to use it, simplicity of device and to keep spacing between children was mentioned in one film message.

Motivational content of the film messages were analysed with specific reference to health, economic upliftment and family welfare. Distribution of messages containing motivational contents is given in Table 2. In comparison to negative aspects, positive aspects were emphasised in motivational content related to health in two film messages. In comparison to positive aspects, negative aspects were emphasised in motivational content related to economic upliftment in two films. Equal emphasis was placed on negative and positive aspects of family welfare in three films. According to the policy and the guidelines for media and extension personnel, it is expected that both positive and the negative aspects of various media message contents will be equally emphasised.

ii. *Forms of Expression*; Even if all the shortcomings of the message have been removed communication could still be a failure without good forms of expression. Good forms of expression requires complete understanding of the subject and establishing good relationship with the target audience. The form of presentation of two films, was imaginative short stories. In other two films there was a dialogue/conversation between two persons. Setting of the film is also one of the important issues in making it effective. Most film maker attempted a neutral, synthesized and all India flavour. This discouraged the viewers' identification with the film characters. If the setting and message is without any relevant reference to specific target audience, there is likelihood that no individual will identify himself with the message.

There were three films in colour and one film in black and white. There was entertainment (music, songs etc.) in all the films. Urban dialects were used in all the four films. Simple messages were presented in all the films. Duration of each film was five, nine, ten and fourteen minutes respectively.

b. Audience Reactions Analysis

The response on understanding of the message was examined in terms of the intended theme of the message. Results are given in Table 3. Reactions of the audience were taken on the understanding of the messages. Out of 60 respondents, 53 (88.40%) informed that they had fully understood the messages and 5 (8.30%) respondents stated that they had partially understood the messages. Two respondents (3.30%) gave no response. Understanding of the messages by respondents was judged by investigator and it was found that out of 60 respondents, 48 (80%) had understood the message fully and correctly. Ten respondents (16.7%) understood the message partially. Two respondents (3.3%) gave no response. A comparison of level of understanding of message as reported by audience and as judged by investigator indicated that five respondents (8.3%) who said that they had fully understood the messages. This gap between the intended theme of the film message and the extent to which it was understood by

TABLE 2
DISTRIBUTION OF MESSAGES CONTAINING MOTIVATIONAL
CONTENTS

Motivational content	Specific Aspects	No. of Messages	Percentage
1. Health	Positive Aspects		
	i. Preserve health of mother	2	22.22
	ii. Assure healthy children	2	22.22
	iii. Lessen worries and overwork on the part of the parents	1	11.11
	Negative Aspects	2	22.22
	i. Affects health of the child	1	11.11
	ii. Children will be unhealthy	1	11.11
	iii. Affects health of the Mother		
	Total	9	100.00
2. Economic Upliftment	Positive Aspects		
	i. Avoid worsening present economic condition	1	11.11
	ii. Gain a higher standard of living	1	11.11
	iii. More physical comforts	1	11.11
	Negative Aspects		
	i. Worsens economic condition	2	22.22
	ii. Decrease in standard of living	2	22.22
	iii. No physical comfort	2	22.22
	Total	9	100.00
3. Family Welfare	Positive Aspects		
	i. Proper rearing of children	3	25.00
	ii. More opportunities for individual attention and expression for child	2	16.66
	iii. Avoid overcrowding in the house	1	8.33
	Negative Aspects		
	i. Difficult to rear the children properly	2	16.66
	ii. No opportunity to give individual attention and expression to the children	2	16.66
	iii. Overcrowding in the house	2	16.66
	Total	12	100.00

TABLE 3
LEVEL OF UNDERSTANDING OF MESSAGES BY THE
AUDIENCE

	Fully understood	Partially understood	No response	Total
As reported by audience	53 (88.40)	5 (8.30)	2 (3.30)	60 (100.00)
As judged by investigator	48 (80.00)	10 (16.70)	2 (3.30)	60 (100.00)

(Percentage are given in parentheses)

the respondents revealed that comprehension of the story of the film did not always lead to comprehension of the intended messages of family planning.

All the 60 respondents were asked to make suggestions on film messages. Out of 60 respondents, 19 respondents (31.6%) offered the suggestions to make the messages more effective. Four respondents (6.6%) suggested that comparative picture of small and large family with more emphasis on advantages of small family should be presented in the message to make it more effective. Three (5.0%) respondents said that theme and setting of the films should be in local regional culture. Films should be of longer duration and messages should be in local/native languages as suggested by three respondents (5.0%) and two respondents (3.3%) respectively. According to seven (11.6%) respondents disadvantages of early marriage and all the family planning methods should be explained to make the message more effective.

CONCLUSION

Agriculture is the major profession of rural community. Therefore, there should be main emphasis on agricultural issues in family welfare messages. Various family planning methods should be covered in film messages in details. Emotional type of appeal is more effective as compared to intellectual type of appeal among rural population who are mainly illiterate. Local language should be used in the films so that audience may be able to understand the message fully. Individual, family or community level of appeal in the messages yields better results than national level of appeal.

There is enough scope for the improvement of the family planning messages by film medium. It is important to design specific messages for specific

target audience, keeping in view, their socio-cultural practices, attitudes and the change sought in the behaviour. Films may be produced at regional level involving local actor, language and setting which will encourage the local audience to identify itself with the messages.

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प्रस्तुत अध्ययन में उड़ीसा राज्य के पुरी जिले में ग्रामीणों को डाक्यूमेंटरी फिल्मों द्वारा प्रसारित किए जाने वाले परिवार कल्याण संबंधी संदेशों और ग्रामीणों द्वारा इन संदेशों को समझ पाने के बारे में अध्ययन करने का प्रयास किया गया है। संदेश का विश्लेषण करने और दर्शकों की प्रतिक्रियायें जानने के लिए यह जांच अलग-अलग दो चरणों में की गई है। साधारण "रैंडम तकनीक" की सहायता से संदेशों का विश्लेषण करने के लिए चार फिल्मों को चुना गया था और दर्शकों की प्रतिक्रिया जानने के लिए 60 ग्रामीणों को चुना गया। इन फिल्मों में कृषि, जनसंख्या और स्वास्थ्य मुद्दों संबंधी सामान्य जन-समस्याओं की अपेक्षा इनके आर्थिक एवं सामाजिक-सांस्कृतिक पहलुओं पर विशेष बल दिया गया था।

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MARKETING AND PRICE DETERMINATION OF CONTRACEPTIVES - AN ECONOMIC ANALYSIS

B.K. Pattnaik*

ABSTRACT

The contraceptive prevalence and its continuity is considered as one of the determinants of fertility. Data show that the rate of use of contraceptive is higher in developed region. As far as contraceptive practices are concerned, the greater share of contraceptive practices is surgical sterilisation rather than IUD, oral pills and condoms. So selling of contraceptives more particularly IUD, oral pills and condoms through social marketing is of potent necessity for fertility reduction. Although the social marketing of contraceptive has generated demand in some developing countries, still then its continuation in long-run may not be possible. Therefore, the economic analysis of price determination and generation of demand for contraceptives most particularly in developing countries is one of the important components of health economics in, these regions.

The provision of contraceptives or conception barrier methods has had a profound impact on the quality of life by enabling couples to determine the size and spacing of their families and is inversely related to fertility preferences (Hammerslough, 1986). But the perspective of continued fertility decline difference not only heavily on continued growth in contraceptive prevalence but also upon both reliability and continuity of use (Jejeebhoy, 1989). The most recent data imply that, for the world as a whole, contraceptive prevalence has reached about 50 per cent, that is about half the couples with the wife in the reproductive ages are currently using contraceptives. In developed regions the proportion was around 70 per cent but in developing regions, where it started since the mid 1960s, the rate is approximately 45 per cent (UN, 1989). In India by the end of 1989 it was 41.9 per cent. The level of current use or contraceptive prevalence varies greatly among the developing regions, from an

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estimated 14 per cent of couples using contraceptive in Africa to 50 per cent in Asia and 56 per cent in Latin America (UN, 1989). Although both access to and use of contraceptives have been increasing, there are still many countries, mostly in Africa and Asia, where much of the population is unfamiliar with any type of contraceptives. Therefore, in these regions acceleration in the marketing of contraceptives is *sin-qua-non* to increase the number of acceptors and to maintain continuity in their use for controlling fertility.

United Nations medium-variant fertility projections show that total fertility rate is declining in developing regions from 3.7 children per women in 1985-1990 to 3.0 children in 2000-2005 and 2.4 children in 2020-2025. It has also estimated that in order to produce this fertility decline, contraceptive prevalence in developing regions will have to rise from the 45 per cent as implied by recent data to 58 per cent in the year 2000 and 71 per cent by 2025. The contraceptive prevalence rate in India being 41.9 according to 1989 data, warrants that it should increase by another 30 per cent during the span of seven years in order to attain the national goal of fertility rate 2.1 by the year 2000.

Although in both developed and developing countries the mix of specific methods is continuing to evolve, still then, the major share of 36 per cent of world contraceptive practices is surgical sterilization especially female sterilization. The prevalence of other practices are 19 per cent intra-uterine devices, 15 per cent periodic abstinence or rhythm, 8 per cent withdrawal or coitus interruptus and the remaining 5 per cent is make up by variety of other methods (UN, 1989). The Indian data also reveal similar picture, out of 41.9 per cent contraceptive users of eligible couples, 29.8 per cent practices sterilization, 5.9 per cent IUD, 4.5 per cent conventional contraceptives and 1.7 oral pills. Of course, the major portion of fertility decline is achieved by sterilization still then, it has its own limitations, most particularly with the young couples desiring to delay their first pregnancy, maintaining a gap between the two pregnancies and unwilling to immediately terminate their potential fertility. The above scenario depicts that there is a need to enhance the marketing of temporary contraceptive methods (oral pills and conventional contraceptives) in the developing region as well as in India. A study to assess the effect of social marketing on oral contraceptive has depicted that it has increased markedly the selling of contraceptives (Mitra and Kamal, 1983). The impact of Matlab Project in Bangladesh on selling of contraceptive prevalence increased dramatically in first six months of the project from 5 over to 20 per cent and subsequently rose to 32 per cent with two years.

The social marketing programme for Nirodh launched in India since 1968. Under this social marketing programme, the sales of condoms have increased from 15.74 million pieces in 1968-69 to 319.58 million pieces in 1990-91. The programme of social marketing of oral pills launched in 1987 has its sale 45.67

lakh cycles in 1989-90 and 58.25 lakh cycles in 1990-91. The impact shows that uptill March 1991, due to social marketing 71.93 million out of 145.14 eligible couples in the country are projected (Family Planning Year Book 1990-91). The India Population Project VII, running in the States of Punjab, Haryana, Gujarat, Jammu & Kashmir and Bihar since 1990, has the objective of generating demand for contraceptives in the participating states through strengthening of the social marketing of contraceptives programmes and a gradual phasing out of free distribution.

In India under social marketing, the contraceptives by the manufacturing companies are procured by Government and then supplied to different marketing companies on demand. Specific geographic areas were earmarked for each company and the product was available through these companies in rural and urban area of different States. The State Government through its coordination committees comprising representatives from the marketing companies is providing contraceptive coverage in the State. The State Governments officials and the Ministry of Health and Family Welfare, Government of India, review the progress of social marketing programme in each State. Government provides umbrella for advertising campaign to create demand for contraceptives, this includes advertisement through newspapers, journals, TV, radio, short films, jingles, cinema slides, hoarding, wall painting and point of sale materials. Assistance was also given to the marketing companies for arranging display contests as well as participation in important meals and fairs. The prices of contraceptives under social marketing are given in Table 1.

TABLE 1

PRICE STRUCTURE UNDER SOCIAL MARKETING OF CONTRACEPTIVES IN INDIA

	Categories	Condoms			Oral Pills
	Sales Price to	Normal (3 pcs.)	Delux (5 pcs.)	Super Delux (4 pcs.)	Mala 'D'
1.	Marketing Co.	0.19 p.	0.67 p.	1.34 p.	1.00 p.
2.	Retailers	0.24 p.	0.80 p.	1.60 p.	1.60 p.
3.	Consumers	0.30 p.	1.00 p.	2.00 p.	2.00 p.

Though there are merit of social marketing, it has drawn criticism from within the public health community. Some have questioned its effectiveness, charging that evaluation studies fail to link social marketingj/vith improved health status. One Kenyan physician, Schuftan (1989) noted that "social marketing makes

people mostly consumers, not protagonists and promoters". Further a country in the long-run may not be able to continue social marketing.

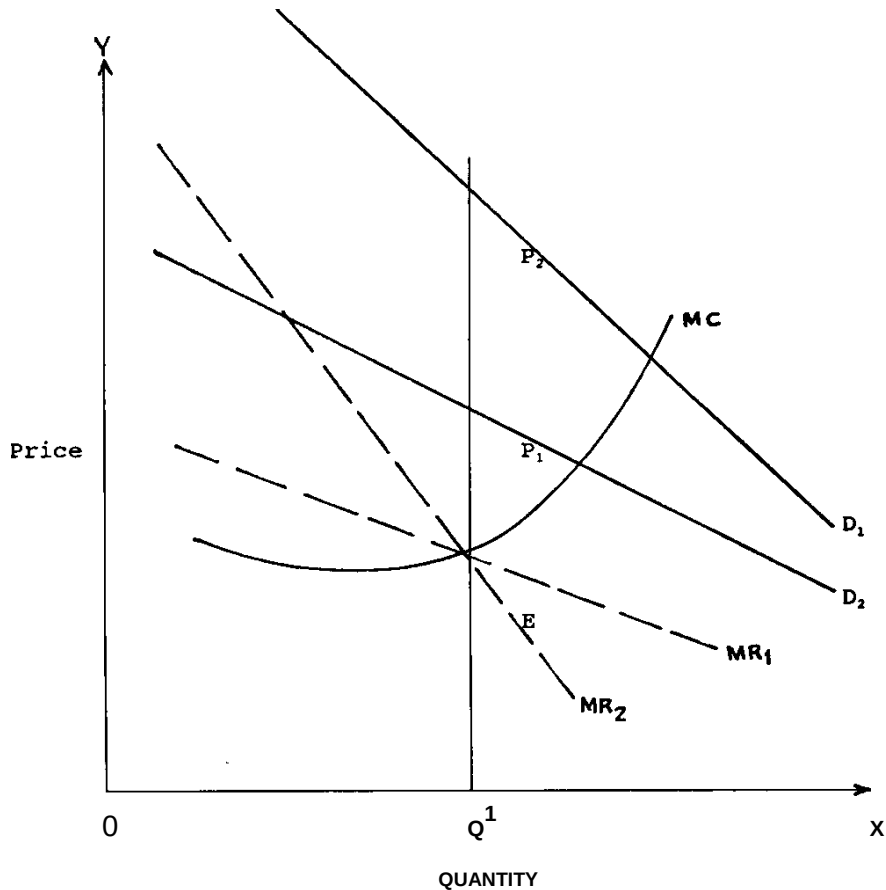
Price Determination in Free Market

If the Government does not fix the pricing for the product to the marketing companies for selling of contraceptives, and also does not provide any umbrella for advertising of contraceptives, then several questions will arise: (i) how much quantities the manufacturing firm will produce and prices to be charged?, (ii) how much selling costs or advertising expenditure the firm will incur so as to achieve its aim of profit maximisation and at the same time would maintain increased prevalence rate of contraceptive?, (iii) what will be the influence of selling cost on price of the product?, and (iv) what should be the optimum level of selling cost or advertising expenditure? and so on.

Generally the production of a firm depends on demand for its product in the market, which is dependent on: (i) price of its product; (ii) the nature of its product; and (iii) the availability of substitute products. Nowadays, close substitutes for products are available in the market, therefore, the firm has to go for advertisement to boost the sale of its product. In recent years, with the satellite networking, the advertising cost has become important determinants of price. Although conceptually same for the layman, but in economics, the selling cost is broader than advertisement expenditure. The advertisement expenditure includes costs on getting the product advertised in newspapers and magazines, radio and television, etc. but the selling costs include the salaries and wages of salesmen, allowances to retailers for the purpose of getting their product displayed and so many other types of promotional activities besides advertisement. The cost of selling includes all outlays made in order to secure a demand or market for the product (Chamberlin, 1956). The fundamental aim of competitive advertising is to increase the sales of one firm at expense of others and not to increase the sales of the group as a whole (Stonier and Hauge, 1972). Advertising proliferates sale of the producer and widens choice of the consumer.

In contraceptive industry (oral pills and conventional contraceptives), firms are selling mostly substitute products. Therefore, a firm can attempt to differentiate its product from others in motivating the consumers and leading them to believe that other products are less substitutable for its own. If the firm is successful, the demand curve for its product will be more inelastic. Assuming that the firm wishes to maximise its profit and its marginal revenue (MR) curve and marginal cost (MC) curve intersecting at point E in Dig. I indicating that with the same marginal cost, a more inelastic demand curve will result in an increased price, moving from P_1 to P_2 . Here the advertising cost is considered as fixed cost, since it is unrelated to the cost of producing additional quantities of the particular product. Therefore,

the cost of advertising itself does not affect the price charged by a firm attempting to maximise its profits.



DIG. I

THE EFFECT OF ADVERTISING ON THE ELASTICITY OF DEMAND AND ON THE FIRM'S PRICING STRATEGY

Another effect of advertising from standpoint of consumer is that it provides price information and also enable them about the substitutability among different product. It reduces the cost of search, since reading a newspaper, watching TV and listening to radio takes less time and money than travelling to different providers to determine the quality, accessibility, methods of use and

prices of the service provided. As a result the demand curves of the different providers would be made elastic. As shown in the Dig. I, with the result of demand elasticity the price falls from P_2 to P_1 .

Repetition of advertisement produces favourable effect on demand. A single advertisement seen once will have at the most a negligible and probably no effect on the consumer, and the outlay for it, is wasted. But continued advertising over a period of time and in different media is far more likely to impinge on the consumer's thoughts and consequent consumption choice (Hibdon, 1969). Besides shaping and transforming everyday life, mediated advertisements create a symbolic environment for their public and so reinforce a culture of consumerism (Murdock and Janns, 1984). The advertising outlay fetches an increasing return to the firm in the beginning because the demand increases more than proportionately to the equal increase in advertising outlay. But as the advertising is stepped up, diminishing returns are likely to set in eventually because the existing buyers may not further increase the demand for the product as a result of more advertising by the firm. This is because as the consumer buys more of a product, its marginal utility falls. Therefore, one pertinent question arises here is that what should be the optimum amount of advertising or selling cost that a firm should incur at the profit maximizing situation.

The profit maximization principle tells that the firm will maximize its profit at the point where marginal cost will equate marginal revenue ($MC = MR$) (Dig. II).

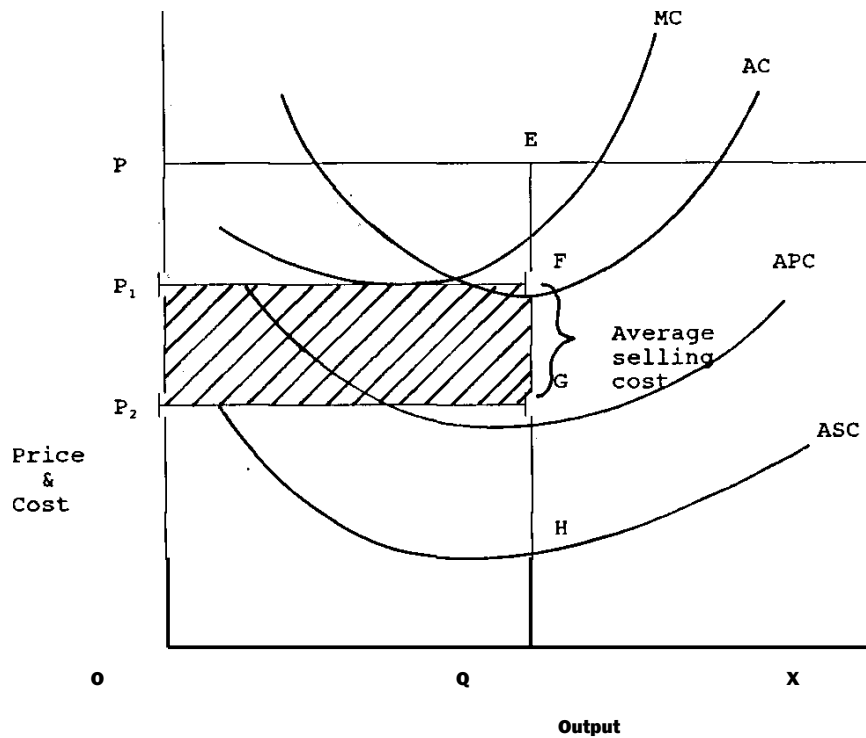
Here in this diagram the ASC is average selling cost and the advertising outlay is taken to be a variable cost. APC is average production cost. Average Cost (AC) is equal to average production cost plus average selling cost ($AC = APC + ASC$). The equilibrium price is OP which incur the firm a profit equivalent to area $PEFP_2$ with a selling cost equivalent to area P_1P_2FG . The optimum unit selling cost is FG.

Beyond Price Determination and Selling Cost

In the developing countries where the promotion of contraceptive selling is going on through social marketing, a system of 'promotional advertising' is more preferable in which case the advertisement of contraceptive producing industry as a whole done but not competitive advertising by individual firms to snatch away the consumers from each other.

Sometimes law interferes with policy in relation to issues such as the requirement of a prescription for oral contraceptives and also in relation to the categories of health care personnel entitled to distribute them. In a country with a high incidence of adolescent pregnancies, a lower age limit might be imposed by

legislation if such legislation already provides for a minimum age limit for users (Paxman, 1984).



DIG. II

THE OPTIMUM SELLING COST AND FIRM'S PRICING STRATEGY

Tariff barriers and restrictions on distribution outlets etc. are constraints on the widespread use of contraceptives. Easy access to contraceptives is an important factor in minimizing the number of unwanted pregnancies (Donaldson and Choe, 1982).

Equitable mix advertisement of different types of contraceptives methods are needed to be promoted. Involvement of private voluntary organizations and community participation in the marketing process will go a long way for its success.

Adequate problem-oriented research taking into consideration the socio-psychological, demographic, economic, cultural, ethical, etc. factors for acceptance and non-acceptance of contraceptives should be conducted and also the impact of I EC and Media on sale and acceptance of contraceptives needs to be investigated. Besides escalation in the quantity supplied and quality of contraceptives should be improved which would create confidence in the users. Ready referral services should be available by the medical and nursing personnel so that the continuity in the prevalence of contraceptives could be maintained.

The generation of demand for contraceptive either through social marketing or through advertisement or counselling is very essential for restricting fertility. Likewise the determination of prices of oral and conventional contraceptives in the free market and its demand generation through competitive advertisement is also crucial factor for the promotion of contraceptive prevalence.

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गर्भनिरोधक उपायों के प्रचलन और इनके लगातार प्रयोग को प्रसवन की के मामले महत्वपूर्ण निश्चायक माना गया है। अध्ययन से प्राप्त आंकड़ों से पता चलता है कि विकसित क्षेत्रों में गर्भ निरोधकों के प्रयोग की दर ऊँची है। जहाँ तक गर्भ निरोधक तरीकों के प्रयोग का प्रश्न है, आई यू डी, गर्भनिरोधक खाने की गोलियाँ तथा कंडोम आदि की तुलना में नसबन्दी आपरेशन अधिक प्रचलित हुआ है। इसलिए प्रसवन दर में कमी लाने के लिए गर्भ निरोधकों, विशेषतः आई यू डी, खाने की गर्भनिरोधक गोलियाँ और निरोध आदि के सामाजिक विपणन की अत्यन्त आवश्यकता है। यद्यपि विकासशील देशों में गर्भनिरोधकों के सामाजिक विपणन के कारण इनकी मांग बढ़ी है फिर भी अभी तक इनका समय तक प्रयोग में बने रहना संभव नहीं हो सका है। इसलिए विकासशील देशों में गर्भ निरोधकों के मूल्य-निर्धारण और इनकी मांग के सृजन संबंधी आर्थिक विश्लेषण किया जाना आवश्यक है तथा यह स्वास्थ्य आर्थिकी के क्षेत्र में एक महत्वपूर्ण घटक है।

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A COMMUNITY STUDY ON CONTRACEPTIVE GAP IN PERIURBAN WOMEN OF SOUTH DELHI

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ABSTRACT

To estimate the proportion of women who were using some kind of contraceptive as against the proportion who emerged to risk of conception the community study was undertaken on 764 women from periurban areas of South Delhi who had given birth to a child in 24 months prior to the date of survey. It was observed that contraceptive use lagged far behind the growing risk of conception and that this contraceptive gap widened as more time elapsed from the child birth.

Traditionally the period of lactational amenorrhoea is viewed as safe against pregnancy and it is well documented that the duration of lactational amenorrhoea is influenced by the intensity and duration of breast-feeding. Prolonged breast-feeding and post-partum abstinence usually contribute to child spacing but unfortunately with current trend of modernisation the practice of these traditional methods is declining and may not be compensated by current status of use of contraceptives. Moreover, most community studies have indicated a positive perception towards reducing the family size and acceptance of small family norm by the women. In the current fertility-contraceptive use scenario of a community it is important that the family welfare programme should focus its efforts to capture the woman as soon as she enters into the phase when she is exposed to risk of conception after the child-birth / abortion. The present study aims to find out current status of contraceptive use among post-partum women and if this use status is sufficient to offset their emerging risk to conception.

MATERIALS AND METHOD

This cross-sectional community survey was carried out in slum/rural colonies of Dakshinpuri, Madangir, Palam village and Munirka village situated at the outskirts of South Delhi. These colonies had an approximate population of

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1,38,145 and 27,630 households. Each household in these colonies was surveyed by door to door contact and information on contraceptive use and lactational amenorrhoea was collected from 764 women who had given birth in a period of 24 months prior to date of survey. The survey was completed within 2 months. Total number of households contacted were 18,600 (approximately 63%) of the total.

The size of the sample was fixed at 720 mothers with inclusion of atleast 30 completed pregnancies for each one month interval and 90 births for every 3 months as the reference period was divided for analysis into intervals of three months. Finally 764 women who fulfilled the criteria of having given birth/births in previous 24 months were recruited in the study.

Each respondents was asked to report whether she was menstruating or not and if using any kind of contraceptive. This current status of information was used for computing a modified life table recommended by "simplified methodology for community-based calculation of proportion of mothers at risk of conception by breastfeeding"³. According to this methodology, the appearance of menstruation after child birth is accepted as concomitant with exposure to conception because menstruation only is an overt expression of resumption of fertility which is recordable. This concept of risk of conception as used in this study is a practical guide for community action and may not be suitable for prediction for an individual as pregnancy can occur during the lactational amenorrhoea and fertility may not be resumed till later after the appearance of menstruation.

RESULTS

The survey covered 764 mothers. Majority (80%) of the women belonged to 20-29 years age group with 13.5 per cent above 30 years. About 44 per cent were illiterate and 35 per cent were educated upto secondary level. Only 17 per cent were from nearby rural areas and 83 per cent were urban. Most belonged to lower social class (75.6%). The number of live births experience ranged from one to nine with 19.1 per cent having 4 or more live births.

Out of 764, 7.1 per cent (54) women were pregnant at the time of interview and 62 per cent (473) had returned to menstruation and rest were still amenorrhoeic. Only 30 per cent (236) women were currently using contraceptives while 70 per cent were not. Amongst the users condom was found most commonly (14%) used followed by IUD (6.5%) and oral pills (3.0%). 5.9 per cent women had a tubectomy while one case had a vasectomy. The Couple Protection Rate (CPR) in the total sample was 33.2 per cent while effective couple protection rate was 22.96 per cent (Table 1).

Detailed risk analysis was undertaken on 710 women excluding 54 (7.1%) women who had become pregnant already.

TABLE 1
DISTRIBUTION OF MOTHERS BY METHOD OF CONTRACEPTIVE USED

Method used	Number of mothers	Percentage
None	474	62.0
Abstinence	2	0.3
Natural family planning	4	0.6
Condom	107	14.0
IUD	50	6.5
Oral Pills	22	2.8
Tubectomy	42	5.5
Vasectomy	1	0.1
Pregnant	54	7.1
Any other*	8	1.1
Total	764	100.0

*Any other includes husband not living with the subject.

A current status modified life table for contraceptive use and menstrual status was computed to find out the proportion of women who had started menstruating after child birth and proportion started use of contraceptives (Table 2). The percentage of women using any type of contraceptive at different time intervals and the women who were menstruating at the same time were put on a graph as shown in Figure I. It may be seen that at 5 months post-partum 30 per cent women were using contraceptives while 38 per cent were menstruating, 37 per cent used contraceptives while 74 per cent menstruated at 12 months and 39 per cent used contraceptives while 93 per cent were menstruating 24 months after child birth.

Thus Figure I shows a glaring contraceptive gap as the two curves are widening instead of converging and overlapping. The gap has widened as the period from child birth has increased. Thus the status of menstruation which is indicative of risk of conception remained uncovered.

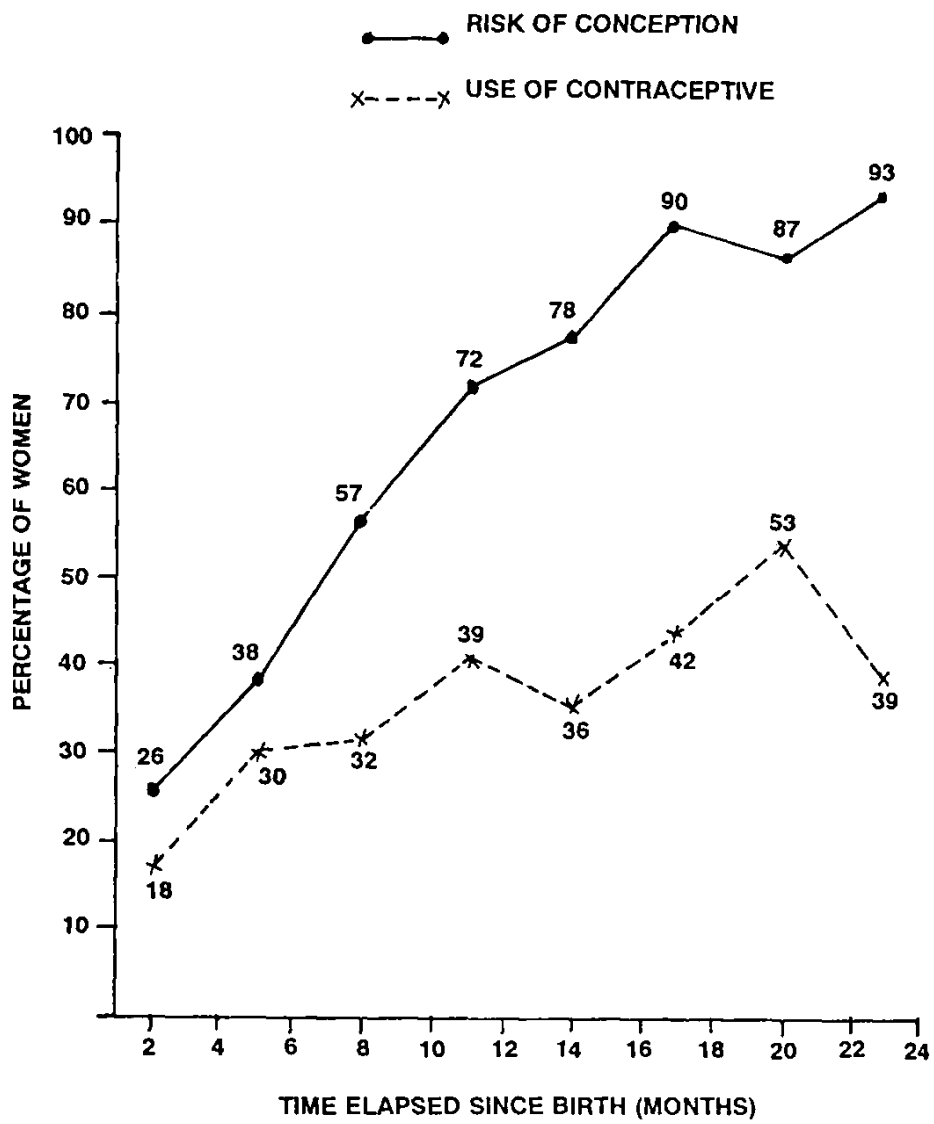


FIG. I

Factors Affecting the Use of Contraceptives

Maternal Age

The Figure II shows that the proportionate practice of contraception increased with the increase in age of mother from 15-19 years to age group 20 years and above. The association between the two was found significant ($X^2 = 6.56$, $df = 3$, $P > .05$).

TABLE 2
CURRENT STATUS ANALYSIS OF WOMEN AT RISK AND USING
CONTRACEPTIVE N=710

Time elapsed since birth of index child (months)	No. of women during the interval	No. of women currently using contraceptive after birth during interval	No. of women at risk (menstruating)
a	b	c(%)	c(%)
0-3	128	23(18.0)	34(26.0)
4-6	135	41 (30.0)	52(38.8)
7-9	132	42(32.0)	76(57.0)
10-12	69	27(39.0)	50(72.0)
13-15	70	25(36.0)	55(78.0)
16-18	86	36(42.0)	78(90.0)
19-21	47	25(53.0)	41 (87.0)
22-24	43	17(39.0)	40(93.0)

Place of Residence

No significant difference in contraceptive use was visible by residence of subjects ($X^2 = 0$ $df = 1$ $P > .05$) Figure III.

Social Class

Contraceptive use was marginally higher in middle class wmen than the poor ($X^2 = 5.06$ $df = 1$ $P > .05$) Figure IV.

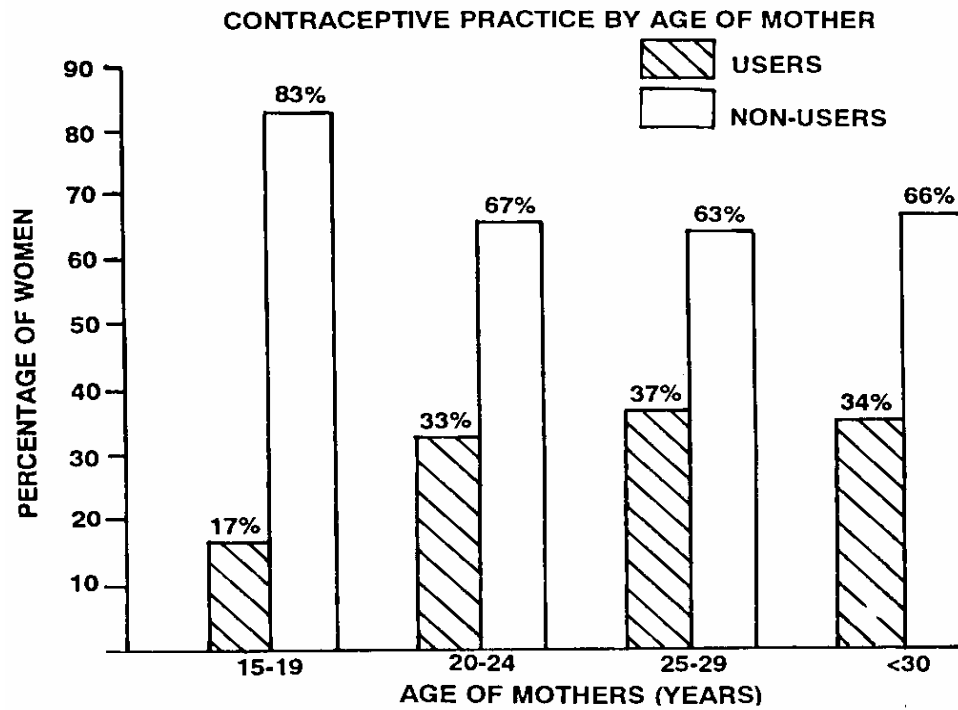


FIG. II

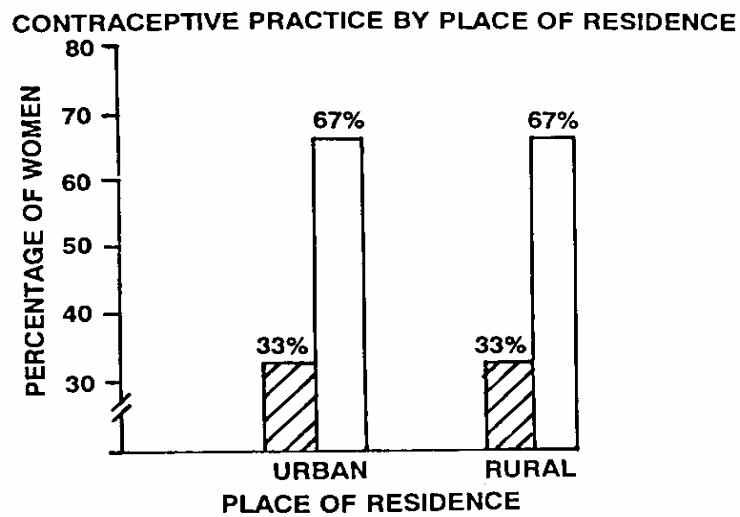


FIG. III

CONTRACEPTIVE PRACTICE BY SOCIAL CLASS

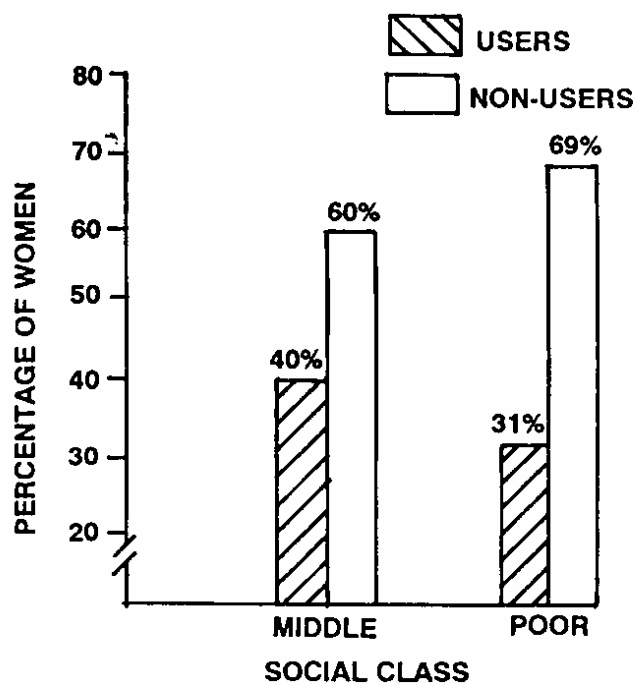


FIG. IV

Literacy Level

The contraceptive gap was minimum for women who were educated upto secondary level or higher while it was widest for illiterate women, thus indicating that the education of women upto secondary level will contribute immensely towards use of contraceptives because at 12 months after child birth above 54 per cent used contraceptives against 20 per cent amongst illiterates. Figure V shows an increasing pattern of contraceptive use with increasing levels of education.

CONTRACEPTIVE GAP BY EDUCATION

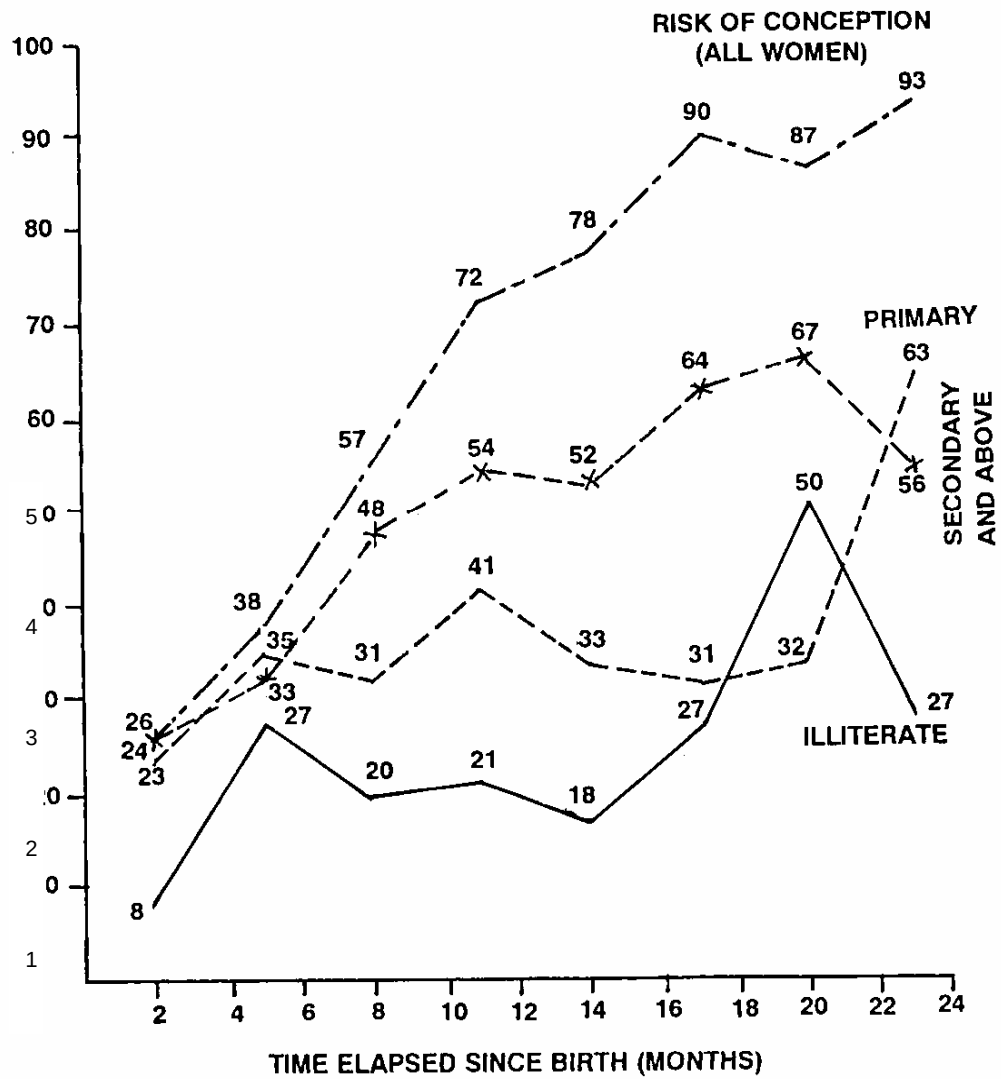


FIG. V

Parity

In the present context number of live births were considered as parity. The increase in the use of contraceptive was found only 3 live births ($\chi^2 = 8.48$ df = 3 $P > .05$) Figure VI

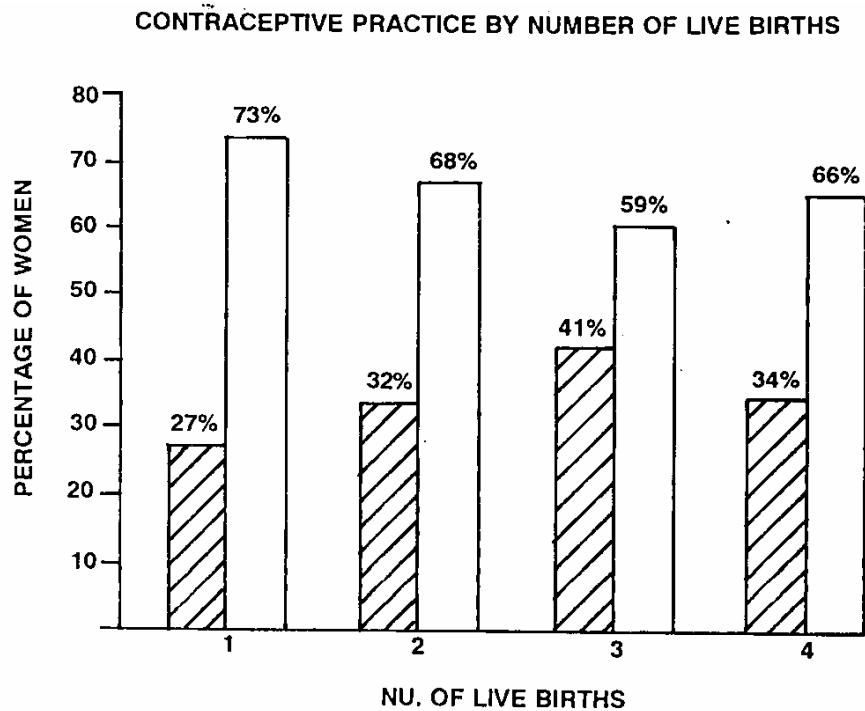
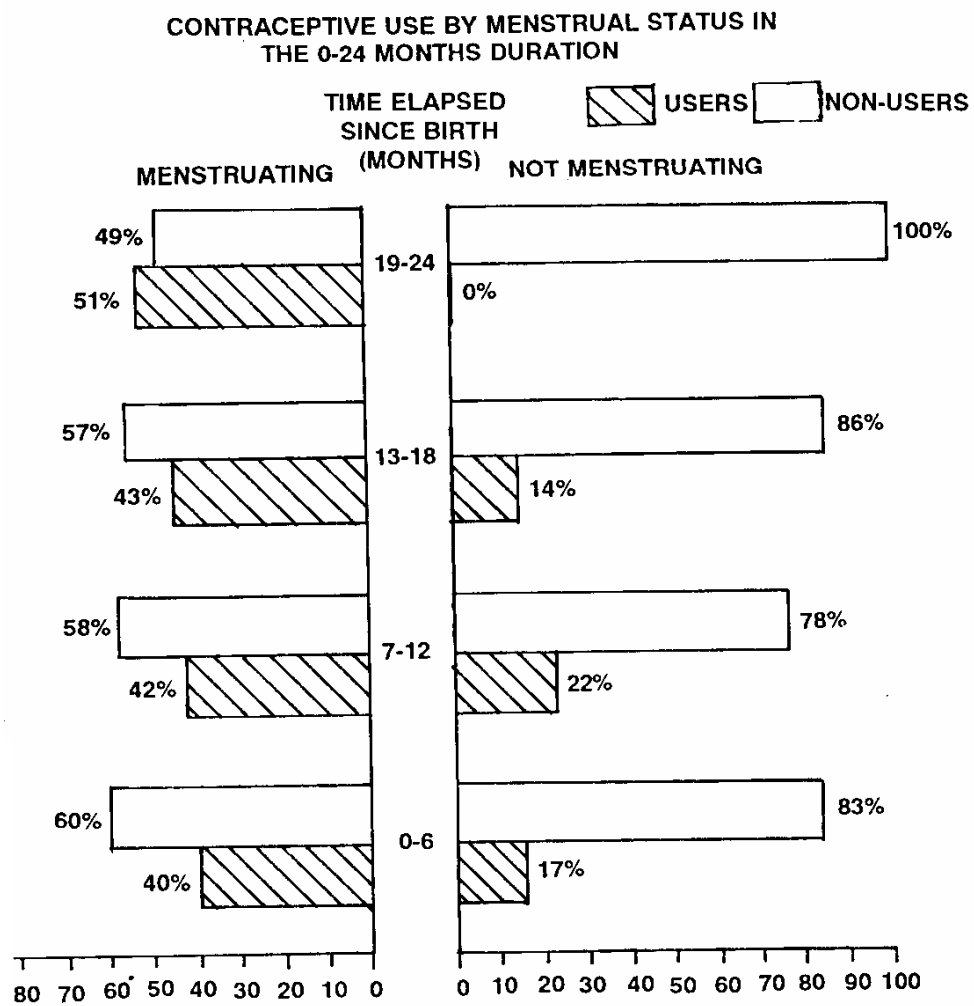


FIG. VI

Resumption of Menstruation

Use of contraceptives was highly associated with the status of menstruation. ($\chi^2 = 46.3$ df = 3 $P > .001$) Figure VII. Amongst 710 respondents 426 (60%) had started menstruating of which 43.7 per cent were using contraceptives while amongst non-menstruating 284 women only 17.6 per cent



PERCENTAGE OF WOMEN

FIG. VII

used any method. Of the 236 users 186 (79%) had attained menstruation indicating that appearance of menstruation was significant for use of contraceptives.

Breast Feeding

Because of universal practice of prolonged breast feeding the association between breast-feeding practice and use of contraceptive was not analysed. About 66 per cent women were still breast-feeding their children even after 24 months post-partum.

Pregnancy Prevalence

The pregnancy prevalence was reported to be 7.1 per cent as 54 women out of 764 were pregnant on day of survey. Seven (13%) out of 54 became pregnant within the lactational amenorrhoea (Table 3). The pregnancy prevalence increased rapidly as more and more time elapsed from birth as 19.6 per cent mothers were pregnant at 19-24 months against 3.8 per cent at 7-12 months after child birth.

TABLE 3
CURRENT LIFE TABLE ANALYSIS OF PREGNANT WOMEN BY ACTUAL PREGNANCY PREVALENCE

Time elapsed since birth (months)	No. of women during interval	No. of pregnant women during the interval	Pregnancy Prevalence
0-6	263	0	0
7-12	209	8	3.8
13-18	180	24	13.43
19-24	112	22	19.6
0-24	764	54	7.1

DISCUSSION

Data from a periurban/slum community of Delhi highlight that contraceptive practice is extremely low, so much so that effective couple protection rate computed was 22.96 per cent which is comparable to lowest performing States of India. In another community study conducted by the authors in 4 slums around Delhi in 1987 the CPR reported was 19.4 per cent. Apparently over the years, even in Delhi where there is over indulgence in providing services the acceptance of contraceptives has remained low and it is not where near the HFA goals. The

range of number of live births was 1-9 and that one-fifth of women had four or more live births is an evidence of unabated fertility. Though it may be claimed that women who were menstruating and of higher age and higher parity used contraceptives more often yet the adoption is at rock bottom level. In periurban areas the scenario is similar as in rural areas and social class also did not show much difference. The contraceptive use was significantly higher in women who were educated upto secondary level or above which has been endorsed by this study also.

As this study particularly related the contraceptive use to menstrual status assuming that it coincides with the risk of conception, it is dismal to note that at about 6 months after child birth when 50 per cent of mothers were menstruating only 30 per cent were covered and at 24 months only 39 per cent were covered while actual pregnancy prevalence rose hand in hand with risk of conception. This wide contraceptive gap needs to be bridged by fire-fighting efforts. It may also be noted that in this-community study according to simplified methodology for purposes of risk estimation, already pregnant women were eliminated (because they will not be eligible for contraceptive use-for the time being). The moral of this study is that intensive effort should be made not only to inform and educate the mothers but to take the facilities close to them. Invariably the proportion of women covered by tubectomy is high in Government of India data⁵. On the contrary in this population 21 per cent of users reported terminal methods and more reliance was observed on condoms (47%) which as such has a high failure rate. The contraceptive use pattern of this survey indicates obvious lack of access to IUDs, oral pills and terminal methods.

It is recommended that in and around Delhi charity should begin at home and in slums and periurban colonies the health infrastructure should be made at par with rural areas, with meticulous follow-up of each birth and the date of first menstruation should be put on record. Contraception must be practised as soon as the first menstruation appears.

Intensive information and education and contraceptive drives must be undertaken on war-footing, may be through mobile camps. It may not be lost sight of that Delhi has more than 50 per cent of its mammoth one crore population consisting of communities as reported in this study.

Similar studies should be conducted annually to see the change in post-partum menstrual pattern which may be influenced by infant feeding practices and commensurate use of contraception to assess the impact of the Family Welfare Crash Programmes.

Lkkjk'k

गर्भनिरोधक का प्रयोग करने पर भी बाद में गर्भधारण का जोखिम उठाने वाली महिलाओं का अनुपात का आंकलन करने के उद्देश्य से प्रस्तुत अध्ययन के अन्तर्गत दक्षिणी दिल्ली के शहरी परिक्षेत्र में 764 महिलाओं पर इस सामुदायिक अध्ययन का संचालन किया गया था। इस अध्ययन में उन महिलाओं को रखा गया था जिन्होंने यह सर्वेक्षण प्रारम्भ होने की तिथि से 24 माह पूर्व की अवधि में एक बच्चे को जन्म दिया था। अध्ययन से यह पता चला है कि गर्भनिरोधक के प्रयोग ने गर्भ धारण के बढ़ते हुए जोखिम को बहुत कम कर दिया था और अगले बच्चे के जन्म का समयान्तराल भी बढ़ गया था।

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**DOES BREAST FEEDING PREVENT PREGNANCY?
PERCEPTION AND PRACTICES OF BREAST
FEEDING WITH SPECIAL REFERENCE TO
COLOSTRUM IN PERI-URBAN WOMEN OF
SOUTH DELHI**

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ABSTRACT

In all total of 1200 mothers from different social strata having children upto the age of two years were interviewed for breast feeding practice and its role in pregnancy prevention. Only 16.4 per cent women believed that breast feeding prevents pregnancy and 31.7 per cent had no knowledge about it. Colostrum feeding practice was common among the sample respondents but they had no adequate knowledge about its merits. The appearance of menstruation has been regarded as a well recognised landmark making a woman exposed to risk of conception irrespective of breast feeding status. Therefore, positive perception of linking pregnancy with onset of menstruation and relevance of colostrum feeding for better infant health should be promoted.

While breast feeding is an unequalled way of providing ideal food for the healthy growth and development of infant, it has an equally unique biological influence on resumption of menstruation and fertility in the mother. In India, although breast feeding is traditional, colostrum rejection is also equally traditional¹. Colostrum is unique in its composition and consists of specific anti-infective factors (Immunoglobulins) which protect neonate from infections and also has a laxative effect to facilitate passage of meconium. Related literature on various Indian communities has indicated though breast feeding is universal yet colostrum is invariably discarded by mothers.

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There is an important relationship between breast feeding and child spacing, it has been known that after the child birth it takes longer for women who breast feed their children to become pregnant than it does for those who do not breastfeed. The maximum birth spacing effect of breastfeeding is achieved when a mother fully breast feeds and thus remains amenorrhoeic. The onset of menstruation is a perceptible measurement of the return of fertility. Do the mothers appreciate this relationship?

It is evident that MCH and Family Welfare Policies and programmes should closely integrate existing community perception and practices of breast feeding with child development and birth spacing.

The present study aims to record the breast feeding practice of mothers in terms of colostrum feeding, its duration and mothers own perception if breast feeding has any role in prevention of pregnancy.

MATERIALS AND METHOD

This cross-sectional study was carried out in peri-urban settlements at the outskirts of South Delhi. These settlements are fairly representative of the population all along the outskirts. A total of 1200 mothers having children upto two years of age on the date of survey were interviewed through to a house to house survey from four of such colonies with the help of a structured and pretested schedule.

The information was collected based on following data:

- i. Demographic characteristics of mother;
- ii. Breast feeding status-colostrum feeding practice, knowledge and source of information; and
- iii. Does breast feeding prevents pregnancy?

The social class of the studied sample was determined as:

Upper Class: Income of more than Rs. 2000/- per month per member.

Middle Class: Income of Rs. 501/- to 2000/- per month per member. Poor

Class: Income of upto Rs. 500/- per month per member.

RESULTS

The age of mother ranged from 16 to 42 years with 81.2 per cent between 20-29 years, 5.3 per cent below 20 years and 13.5 per cent above 29 years. Forty-three per cent women were illiterate and 41 per cent were educated upto secondary level and above. Majority (80%) of them were poor.

Duration of Breast Feeding

More than 90 per cent mothers were still breast feeding at six months followed by 84 per cent, 74 per cent and 66 per cent at 12, 18 and 24 months after child birth respectively. The mean duration of breast feeding for the child one before the index child was 9.3 months.

Colostrum Feeding Practices

Out of 1200 mothers, 78.8 per cent had fed colostrum to their newborns. About 34.8 per cent expressed that colostrum feeding is good, 17.1 per cent said that it is harmful and 48.1 per cent did not know anything about it. The knowledge about colostrum feeding if it is good/harmful came to them from self-education (6.9%), from the doctors (21.0%), from relatives (52.0%), through TV/Media (10.8%) or from the health personnel (9.3%).

Factors Influencing Colostrum Feeding

Social Class: Table 1 shows colostrum feeding practice is more associated with middle than poor social class ($X^2 = 9.21$ df = 1 $P < .01$). The association between social class and positive knowledge about colostrum was found significant (Table 2 $X^2 = 53.6$ df = 2 $P < .001$). About 50.7 per cent middle class women defined colostrum as good while 28.6 per cent poor said so. While 19.5 per cent poor women thought it is harmful and only 11 per cent from middle class said so. While 52 per cent poor women did not know about the beneficial attributes of colostrum, only 38 per cent middle class women showed their ignorance.

Main source of information amongst poor mothers were their relatives 61.8 per cent whereas middle class women were informed by relatives (32.4%) as well as doctors (32.4%). Education was also a source of information in 14.9 per cent women in middle class but only 2.9 per cent in poor class (Table 3 $X^2 = 72.1$ df = 4 $P < .001$).

TABLE 1
DISTRIBUTION OF MOTHERS BY SOCIAL CLASS AND
COLOSTRUM FEEDING PRACTICE

Social Class	Colostrum Feeding Practice		Total
	Yes	No	
Middle	285 (84.6%)	52 (15.4%)	337 (100.0%)
Poor	661 (76.6%)	202 (23.4%)	863 (100.0%)
Total	946 (78.8%)	254 (21.2%)	1200 (100.0%)

$$X^2 = 9.21 \quad df = P < .01$$

TABLE 2
DISTRIBUTION OF MOTHERS BY SOCIAL CLASS AND
KNOWLEDGE ABOUT COLOSTRUM

Social Class	Knowledge about Colostrum			Total
	Good	Harmful	Don't know	
Middle	171 (50.7%)	37 (11.0%)	129 (38.3%)	337 (100.0%)
Poor	247 (28.6%)	168 (19.5%)	448 (51.9%)	863 (100.0%)
Total	418 (34.8%)	205 (17.1%)	577 (48.1%)	1200 (100.0%)

$$X^2 = 53.6 \quad df = 2, P < .001$$

Education

The practice of colostrum feeding was also associated with level of education (Table 4 $X^2 = 18.89$ $df = 2$ $P < .001$). It was found more common (82.9%) among secondary and above educated women. However about 75 per cent illiterate and primary educated women had fed colostrum. Only 48.4 per cent secondary and above educated women had correct knowledge that colostrum is

good while more than 50 per cent women either illiterate or primary educated did not know anything about it (Table 5 $\chi^2 = 81.52$ df = 4 P <.001).

TABLE 3

DISTRIBUTION OF MOTHERS BY SOCIAL CLASS AND SOURCE OF INFORMATION REGARDING COLOSTRUM FEEDING

Social Class	Sources of Information					Total
	Education	Doctor	Relatives	TV/Media	Health Personnel	
Middle	31 (14.9%)	67 (32.4%)	67 (32.4%)	25 (12.1%)	17 (8.2%)	207 (100.0%)
Poor	12 (02.9%)	64 (15.4%)	257 (61.8%)	42 (10.0%)	41 (09.9%)	416 (100.0%)
Total	43 (06.9%)	131 (21.0%)	324 (52.0%)	67 (10.8%)	58 (09.3%)	623 (100.0%)

$$\chi^2 = 72.1 \quad df = 4 \quad P < .001$$

TABLE 4

DISTRIBUTION OF MOTHERS BY THEIR EDUCATION LEVEL AND COLOSTRUM FEEDING PRACTICES

Education Level	Colostrum Feeding Practices		Total
	No	Yes	
Illiterate	128 (24.6%)	392 (75.4%)	520 (100.0%)
Primary	42 (22.5%)	145 (77.5%)	187 (100.0%)
Secondary and above	84 (17.1%)	409 (82.9%)	493 (100.0%)
Total	254 (21.2%)	946 (78.8%)	1200 (100.0%)

$$\chi^2 = 18.89, \quad df=2 \quad -p= <.001$$

It was found that relatives were source of information in 74 per cent illiterate and 54 per cent primary educated women while about 30 per cent secondary educated women were educated by the doctors and 34 per cent from their relatives (Table 6 $\chi^2 = 113.81$ df = 6 $P < .001$)

TABLE 5
DISTRIBUTION OF MOTHERS BY EDUCATION LEVEL AND KNOWLEDGE REGARDING COLOSTRUM

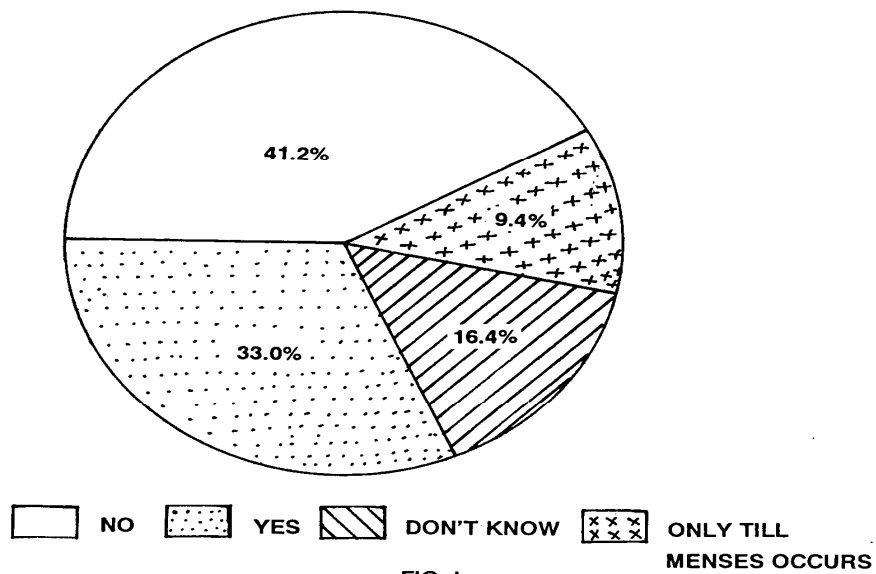
Education Level	Colostrum Knowledge			Total
	Good	Harmful	Don't Know	
Illiterate	115 (22.1%)	119 (22.9%)	286 (55.0%)	50 (100.0%)
Primary	64 (34.4%)	27 (14.5%)	95 (51.1%)	186 (100.0%)
Secondary and above	239 (48.4%)	59 (11.9%)	296 (39.7%)	494 (100.0%)
Total	418 (34.8%)	205 (17.1%)	577 (48.1)	1200 (100.0%)

$$\chi^2 = 81.52 \text{ df} = 4 \text{ } P < .001$$

Maternal age, place of residence and parity had no association with colostrum feeding practices, knowledge and source of information.

Does Breast Feeding Prevent Pregnancy?

Women were asked regarding their perception for breast feeding as a contraceptive method. Only 16.4 per cent reported to believe that breast feeding prevents pregnancy. Thirty-three per cent mothers did not know about it 9.4 per cent women believed that breast feeding prevents pregnancy only till menses occurs as shown in Fig. I.



Factors Influencing Perception if Breast Feeding Prevents Pregnancy

As the maternal age increased perception regarding breast feeding prevents pregnancy, became more clear 15.4 per cent > 30 years age group mothers believed that breast feeding prevents pregnancy only till menses occurs (Table 7 $\chi^2 = 44.5$ df = 8 P < .001).

TABLE 6
DISTRIBUTION OF MOTHERS BY EDUCATION LEVEL AND
SOURCE OF INFORMATION ABOUT COLOSTRUM

Education Level	Source of Information					Total
	Education	Doctor	Relatives	TV/Media	Health Personnel	
Illiterate	0 (0.0%)	21 (9.0%)	172 (73.8%)	18 (7.7%)	22 (9.5%)	233 (100.0%)
Primary	1 (1.1%)	21 (22.6%)	50 (53.8%)	10 (10.7%)	11 (11.8%)	93 (100.0%)
Secondary and above	42 (14.1%)	89 (30.1%)	102 (34.3%)	39 (13.0)	25 (8.41%)	297 (100.0%)
Total	43 (6.9%)	131 (21.1%)	324 (52.0%)	67 (10.7%)	58 (9.3%)	623 (100.0%)

$$\chi^2 = 113.81 \text{ df} = 8 \text{ P} < .001$$

Number of Live Births

Women having > 4 live births were more clear regarding preventive effect of breast feeding as 19.1 per cent expressed that breast feeding prevents pregnancy upto reoccurrence of menstruation (Table 8 $\chi^2 = 98.26$ df = 9 P < .001).

Social Class

Amongst middle class women 50.7 per cent said that they did not perceive that breast feeding prevents pregnancy as compared to 37.4 per cent of poor class. However the 10.7 per cent poor women also associated pregnancy prevention due to breast feeding upto reoccurrence of menses only (Table 9 $\chi^2 = 19.55$ df = 3 P < .001).

TABLE 7
DISTRIBUTION OF MOTHERS BY THEIR AGE AND VIEWS
REGARDING WHETHER BREAST FEEDING PREVENTS
PREGNANCY

Age Group (Years)	Whether Breast Feeding Prevents Pregnancy				Total
	No	Yes	Don't know	Only till menses occurs	
15-19	22 (34.9%)	8 (21.7%)	32 (50.8%)	1 (1.6%)	63 (100.0%)
20-24	204 (38.1%)	83 (15.5%)	205 (38.3%)	43 (8.0%)	535 (100.0%)
25-29	198 (45.0%)	69 (15.7%)	129 (29.4%)	44 (10.0%)	440 (100.0%)
>30	70 (43.2%)	38 (23.5%)	29 (17.9%)	25 (15.4%)	162 (100.0%)
Total	494 (41.2%)	198 (16.5%)	395 (32.9%)	113 (9.4%)	1200 (100.0%)

$$X^2 = 44.5 \text{ df} = 8 \text{ P} < .001$$

TABLE 8
DISTRIBUTION OF MOTHERS BY NUMBER OF LIVE BIRTHS AND
VIEWS REGARDING WHETHER BREAST FEEDING PREVENTS
PREGNANCY

No. of Live Births	Whether Breast Feeding Prevents Pregnancy				Total
	No	Yes	Don't know	Only till menses occurs	
1	116 (34.8%)	45 (13.6%)	164 (49.2%)	8 (2.4%)	333 (100.0%)
2	157 (44.1%)	52 (14.6%)	113 (31.7%)	34 (9.6%)	356 (100.0%)
3	131 (45.8%)	50 (17.5%)	77 (26.9%)	28 (9.8%)	286 (100.0%)
>4	90 (40.0%)	51 (22.7%)	41 (18.2%)	43 (19.1%)	225 (100.0%)
Total	494 (41.2%)	198 (16.5%)	395 (32.9%)	113 (9.4%)	1200 (100.0%)

$$X^2 = 98.26 \text{ df} = 9 \text{ P} < .001$$

TABLE 9
DISTRIBUTION OF MOTHERS BY SOCIAL CLASS AND VIEWS REGARDING
WHETHER BREAST FEEDING PREVENTS PREGNANCY

Social Class	Whether Breast Feeding Prevents Pregnancy				Total
	No	Yes	Don't know	Only till menses occurs	
Middle	171 (50.7%)	51 (15.2%)	94 (27.9%)	21 (6.2%)	337 (100.0%)
Poor	323 (37.4%)	147 (17.0%)	301 (34.9%)	92 (10.7%)	863 (100.0%)
Total	494 (41.2%)	198 (16.5%)	395 (32.9%)	113 (9.4%)	1200 (100.0%)

$$X^2 = 19.55 \text{ df} = 3 \text{ P} < .001$$

Education

More common perception regarding breast feeding alone prevents pregnancy rested with illiterate women (11.5%) as compared to primary (8.0%) and (7.7%) secondary and above educated women (Table 10 $X^2 = 29.29$ df = 6 P < .001).

TABLE 10
DISTRIBUTION OF MOTHERS BY EDUCATION LEVEL AND
VIEWS REGARDING WHETHER BREAST FEEDING PREVENTS
PREGNANCY

Education Level	Whether Breast Feeding Prevents Pregnancy				Total
	No	Yes	Don't know	Only till menses occurs	
Illiterate	184 (35.4%)	95 (18.3%)	181 (34.8%)	60 (11.5%)	520 (100.0%)
Primary	64 (34.3%)	37 (19.8%)	71 (37.9%)	15 (8.0%)	187 (100.0%)
Secondary and above	246 (49.9%)	66 (13.4%)	143 (29.0%)	38 (7.7%)	493 (100.0%)
Total	494 (41.2%)	198 (16.5%)	395 (32.9%)	113 (9.4%)	1200 (100.0%)

$$X^2 = 29.29 \text{ df} = 6 \text{ P} < .001$$

DISCUSSION

This study confirms the trend of prolonged breast feeding as noticed by Kumar *et al.*⁶ as more than 66 per cent mothers were still breast feeding at 24 months post-partum. It was well visible from the responses of mothers regarding

their perception about the role of breast feeding in preventing pregnancy which cleared up with their past personal experiences as older mothers with higher parity associated the protective role only till the menstruation occurs. Similarly 50 per cent middle income group women also indicated the importance of breast feeding till first menstruation only. The findings of the study are significant and indicate that community in general has tendency for a positive and rational view towards breast feeding's role in pregnancy prevention and not a blind faith in breast feeding. It is also worthy of notice as age matured more and more mothers felt that breast feeding alone does not prevent pregnancy. These perceptions should be used for motivating the mothers for using contraceptive during the breast feeding and positively if menstruation occurs.

The practice of colostrum feeding was very common without having its proper and adequate knowledge. Only 35 per cent women know that colostrum is good. Relatives were the main source of information. Results revealed that an improved or effective practice is determined by social class and higher level of education.

From a programme point of view, community perception! "breast feeding prevents pregnancy only till the occurrence of menstruation" can be treated as extremely positive for building communication programmes for family welfare.

CONCLUSIONS

In poor and middle class women living in peri-urban colonies of Delhi, the ^ breast feeding practice is quite prolonged. The perception about breast feeding's role in preventing pregnancy is quite factual, as women do believe that protection is only upto the time menstruation appears and the belief that the breast feeding does not prevent pregnancy rises with age, more number of children, higher level of education and higher social class. Hence motivational counselling for adopting contraception must cash on this perception and persuade the mother to adopt a method as soon as menstruation occurs regardless of breastfeeding. Regarding colostrum feeding, there is a high level of positive practice but community needs to be informed about the protective and nutritive value of colostrum.

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स्तनपान अभ्यास और गर्भधारण को रोकने में स्तनपान कराने की भूमिका का पता लगाने के लिए दो वर्ष तक की आयु वाले शिशुओं की विभिन्न सामाजिक स्तर की 1200 माताओं से साक्षात्कार किया गया था। केवल 36.4 प्रतिशत महिलाओं का प्रतिशत महिलाओं को इस संबंध में कोई जानकारी नहीं थी। कोलोस्ट्रम पिलाने का रिवाज सभी उत्तरदाताओं में समान पाया गया था लेकिन उन्हें इससे होने वाले फायदों के बारे में कोई जानकारी नहीं थी। स्तनपान की अपेक्षा मासिक धर्म होने को पुनः गर्भधारण हो जाने की सही निशानी समझा जाता था। इसलिए मासिक धर्म होने के पश्चात गर्भधारण होने की अवधारणा को एक साथ जोड़ा जाना चाहिए तथा शिशु के स्वास्थ्य के लिए कॉलोस्ट्रम पिलाने की धारणा को प्रोत्साहित किया जाना चाहिए।

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A STATUS STUDY OF TRAINING IN MCH&FW MEDICAL COLLEGES OF INDIA

S. Bhatnagar*, D.H. Nath, Alok Banerjee***, P.L. Trakroo****, I. Murali***** and D.S. Singhal*******

ABSTRACT

This study was undertaken to evaluate undergraduate MBBS training in MCH and FW in 44 randomly sampled medical colleges of India. Data on teaching curricula, training methodology, learning opportunities etc. were collected through observations, questionnaires sent to Deans/Principals and faculty and undergraduate students and interns. The data show that MCH and FW have not been given the urgency and priority as a national concern by the medical colleges. The faculty of colleges need orientation in goals of MCH and FW. The crucial departments involved in teaching of MCH and FW are understaffed. The training facilities in terms of audio-visual aids and transport are very meagre. The faculty is not oriented towards educational technology and they still follow elementary methods of teaching and many colleges do not have even curriculum committees. The MBBS curriculum needs to be revised immediately to lay proper emphasis on competence based teaching with proper emphasis on MCH and FW.

The Government of India has committed itself to the goal of HFA and NRR-I by 2000 AD. Successive Five Year Plans have placed due emphasis on family welfare services so as to improve the health of mothers, ensure survival of children and control population growth. The National Health Policy envisages strengthening of MCH, nutrition and family welfare services. At the grassroot level the trained dais remain the sheet anchor for domiciliary midwifery service. It is being ensured, preferably, to have one female health guide per 1000 population to promote MCH and FW education in the community. The Government of India, in its efforts, is trying to broaden the base of family welfare work at grassroot level.

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The increased consciousness in the community is surely going to generate more active demand for effective delivery of family welfare services leading, among other things, to the control of population.

It is being realised that our Medical Officers of dispensaries, PHCs, CHCs, district Family Planning Bureaus, Post-Partum Centres and Family Welfare Centres both rural and urban need to be fully skilled in the methods and techniques of family welfare so that they can monitor and supervise this wide network of infrastructure. Obviously their usefulness and participation in the programme would largely depend upon their training in family welfare which is imparted during graduate medical education (GME). Although Medical Council of India has given extensive guidelines for teaching of MCH and FW to undergraduates and interns which is practised by all the medical colleges, yet it is a common experience that the young doctors after having passed out their MBBS course are not able to handle MCH and FW cases with confidence. This is a matter of concern and makes it necessary for us to have a close look into the processes of undergraduate training.

Therefore, the Ministry of Health and Family Welfare felt an urgent need to review the status of training in family welfare as is being currently imparted in medical colleges and to identify the problems, lacunae and bottlenecks which are coming in the way of the various departments in medical colleges and various factors that might limit their role or function in the preparation of the outgoing students to face the challenge of providing MCH and FW at the community level.

An attempt is, therefore, made in this paper to present the status of training and teaching of family welfare in selected medical colleges, their major constraints and bottlenecks and to suggest a mechanism to continuously monitor the training programmes for its continuous improvement.

OBJECTIVES OF THE STUDY

1. To review the objectives, curriculum, design, course contents, educational technology and examination pattern adopted by the colleges;
2. To assess the ways in which the curriculum is being executed so as to develop required attitudes, knowledge and skills *i.e.* competence to successfully help achieve the goals of HFA and NRR-I by 2000 AD; and
3. To assess the bottlenecks in operationalising the course curriculum and additional new training requirements.

MATERIALS AND METHOD

This paper is based on a study of status of training in MCH and FW in 44 randomly sampled medical colleges. Care was taken that colleges from each State were sampled in proportion to the number that existed in the State.

The study was conducted in 1988-89.

Information for the study was obtained on a proforma which was sent to the Dean's office and departments of anatomy, physiology, biochemistry, pharmacology, forensic medicine, surgery, obstetrics and gynaecology, paediatrics and community medicine for indicating their course contents, student postings, staff positions and training strategy at various locations. The faculty, principals/deans and students were interviewed and observations made on the spot by a team of investigators. Further a self-administered questionnaire on knowledge, attitudes and reported practice was served to a sample of 30 students in each phase *i.e.* pre-clinical, para-clinical, clinical and internship. Thus information was collected from 120 students from each medical college. The respondents consisted of 1201 pre-clinical, 1216 para-clinical, 1215 clinical students and 1008 interns - a total of 4640 out of 5280 who were served the questionnaire. The overall response to the questionnaire was thus 87.8 per cent.

RESULTS AND DISCUSSIONS

In 44 medical colleges studied the intake of students ranged between 50 per year at Gaya, Jamshedpur and Ambajogai to more than 200 at Manipal, Trivendrum and Davengere. A map of India showing location of medical colleges studied is appended.

The total bed strength of hospitals attached to the medical colleges was found to be adequate according to MCI norms because most colleges had under their jurisdiction smaller maternity hospitals, TB hospitals etc. of the town for teaching purposes. The proportion of MCH beds, ranged between 10 per cent at Cotmbatore to a maximum of 25-30 per cent at Pune, Patna, Hubli, Srinagar and Jamshedpur. All medical colleges followed the MCI guidelines, had curriculum committees or academic councils or board of studies and attempted to define the-institutional and departmental objectives. However in several colleges individual faculty members were not aware of specific guidelines related to their subjects.

Family Planning, Teaching, Assessment and Examination

The coverage of various elements in family planning as specified by the MCI by the individual departments was found to be exhaustive and adequate.

However, the clinical and practical orientation towards individual and community nutrition was rather poor. The teaching emphasis was more on chemical aspects of nutrition and intricate laboratory tests which are hardly used by the student in their future career. The coverage of topics on family planning in subjects like OBGYN, paediatrics and community medicine were found to be adequate and knowledge provided by the teachers was fairly good. However, the course content in pharmacology and forensic medicine needs to be revised and updated in terms of primary health care, paediatrics, essential drugs, pharmacopoeia and dosages and legal implications of family planning procedures and abortions. There was no integrated teaching because of the transfer of faculty, inter-departmental incoordination and lack of support from curriculum committees and authorities.

The mix of didactic and practical teaching was satisfactory in all colleges but the availability of audio-visual aids like overhead projectors, transparencies and learning materials were an outstanding constraint. In Srinagar medical college, the departments of Anatomy and OBGYN had acquired video cassettes for teaching of students and such student time was allocated to demonstration through videotapes.

All medical colleges except Ambajogai and Aurangabad had reserved 10-25 per cent marks for internal assessment. Few colleges also had a weightage in terms of marks allocation to teaching in family planning. In Maharashtra 10 per cent of OBGYN marks were reserved for family planning and the students were required to maintain a Journal of 20 labour cases and 5 Vasectomy/ Tubectomy/MTP/IUD cases which carries 5 marks in the final examination. A record of labour cases is kept by all the medical colleges. Though no formal allocation of marks has been defined yet both pre-clinical and para-clinical subjects do include a question on family planning in final examination.

Learning During Internship

The interns posting in OBGYN, was 2-3 months in most colleges. The paediatric posting was from 0 to 2 months. Community medicine posting ranged from 2-6 months.

A special posting in family planning under Hospital Post Partum Programme was noticed in the colleges of Bihar, Rajasthan, UP and MP and ranged from 2-6 weeks. In Maharashtra at both Aurangabad and Ambajogai, students were posted for 6 months at a PHC and another 6 months at civil hospitals.

Most colleges had not defined, the minimum activities an intern is required to do during the internship period. Departments of PSM had laid out a range of

activities that the interns should undertake during their rural posting. At places department of paediatrics and OBGYN had also identified skills/activities for the interns. The interns posting schedules were made either by the Dean or the Medical Suprintendents. For district postings neither the objectives the scope of learning nor the minimum skills to be learnt by the student had been laid out. Liaison between the Dean and the District Health Officers had not been established in most medical colleges. This observation was reinforced by the responses of the clinical students and interns.

Most of the interns disregarded their postings in last 4-5 months and were reported busy preparing for the postgraduate entrance examination.

Except AFMC all colleges had a Rural Health Training Centre where students were posted and rotated during the internship. They got enough opportunities for assisting in tubectomy as a first assistant, insertion of IUDs and observing MTP. In all colleges the interns participated fully in immunisation within the clinics and at the sub-centres. Most colleges had the responsibility of UIP, hence immunisation turned out to be a major activity for student participation. However, the clinical students and interns responses towards actively conducting these activities was discouraging.

Learning Under the Reorientation of Medical Education (ROME) Scheme: According to college authorities in no college the ROME Scheme was fully operational. It is unfortunate that a good opportunity to provide a comprehensive exposure to the health services is being lost because of administrative delays, non-commission of buildings and connection of water supply, lack of transport and lack of the physical facilities. The coordination committees on ROME Scheme had been constituted on paper, but they had hardly ever deliberated on the problems.

Learning in Hospital Post-Partum Programme: The hospital post-partum programme was fully operational in all colleges. In most of the colleges the students rotated in the programme for 2 weeks during clinical phase and for 2 weeks during the internship. Training in vasectomy had suffered a tremendous set back because of few number of cases available for teaching to interns. The department of surgery did not consider it necessary to teach vasectomy separately as a very special procedure.

Inspite of exhaustive training content reported by the departments the students' knowledge and practices clearly showed that more emphasis should be laid on teaching of nutrition, population problems, needs of primary health care, cold chain system and use of essential drugs, immunisation, contraceptive procedures and child care.

The students failed to answer such common abbreviations as HFA and PHC. About 25-55 per cent of interns and clinical students had not taken the weight of an infant and had never given an immunisation nor had even prescribed a condom {See Fig.I, II and III). The knowledge regarding oral pills was very inadequate. Only a few students reported having inserted an IUD or having assisted a vasectomy. The views expressed by students for family planning were -corroborated by the medical officers posted at primary health centres.

The students expressed that their training in family welfare was inadequate and that it should be improved. The students also felt the training in family welfare and in preventive and social medicine is kept at a low profile and did not carry much prestige.

Most interns asserted that they could handle much more responsibilities in the rural posting and would like to work more independently though under supervision.

Major Constraints and Bottlenecks for Teaching of Family Planning

There was lack of orientation of Deans/Principals and faculty towards the National Goals of HFA by 2000 AD, and national priorities of MCH and population control had not been given due urgency by the authorities.

A large number of staff positions and faculty positions were lying vacant. The percentage of shortfall in the faculty according to MCI norms is shown in Fig. IV and V. In pre-clinical departments particularly the shortage of qualified medical personnel was overwhelming.

The service load of departments of OBGYN and Paediatric had increased many-folds. The MTPs and tubectomies had further added to workload, but OBGYN was one unique department where the staff positions did not match with the workload. The turnover of patients in OBGYN wards ranged from 30-77 per bed per month in some hospitals.

Another department where the shortage in faculty positions was outstanding was community medicine. It may be noted that the teaching locations are spread wide apart between Urban Health Centres, Rural Health Training Centres and ROME-PHCs. To manage teaching at so many locations the posts sanctioned are too few and there should be a different set of criteria for staffing this department.

CLINICAL STUDENT+ INTERNS (N - 2 2 2 3)

KNOWLEDGE & PRACTICE

CHILD CARE

% NEVER DONE

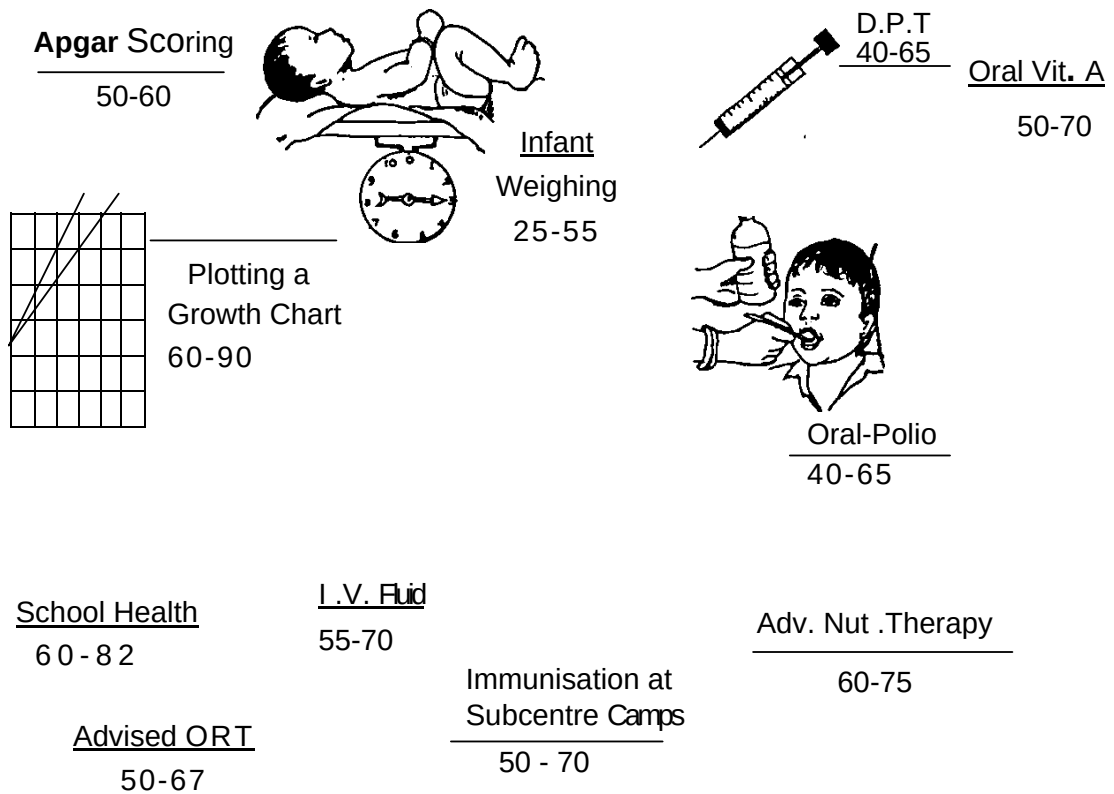


Fig.I

KNOWLEDGE + PERFORMANCE OF CLINICAL STUDENTS + INTERNS (N - 2223)

MATERNAL CARE

% NEVER DONE

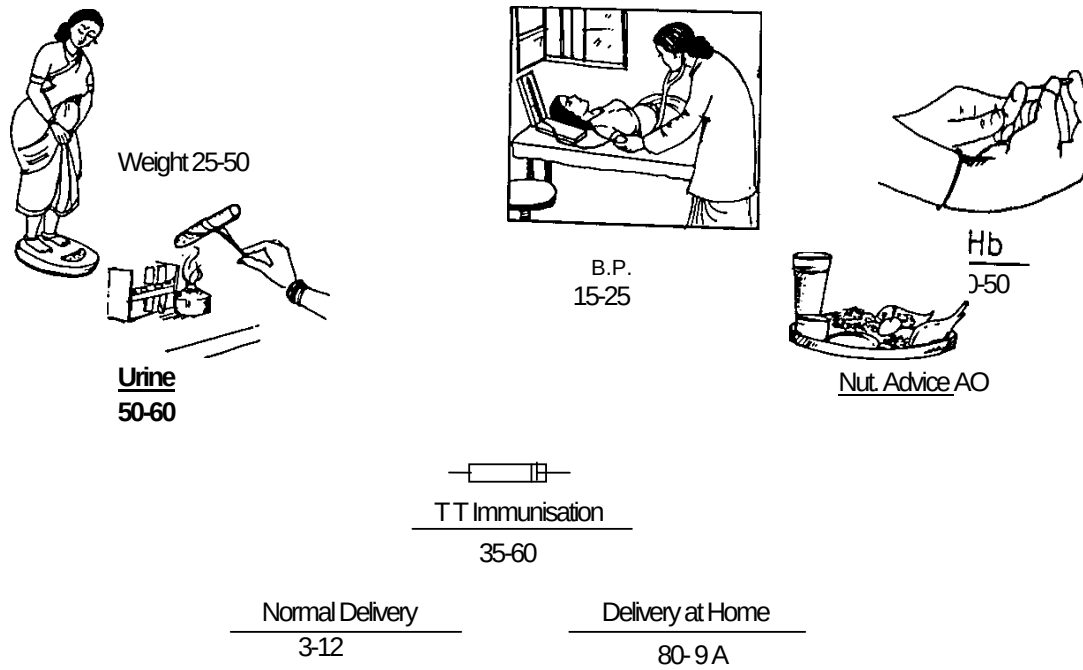


Fig.II

INTERNS PERFORMANCE (N - 1008)

F. P. PROCEDURES

% NEVER EVEN OBSERVED

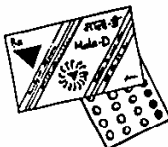
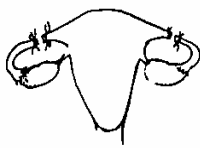
 IUD Insertion 10-25	 Prescribed Oral-Pill 30-55
 Prescribed Condom 50-60	MTP 15-30
 Vasectomy 33-65	 Tubectomy Lap Mini Lap 35-45 33-65

Fig. III

MEDICAL COLLEGE STUDY FACULTY SHORTAGE

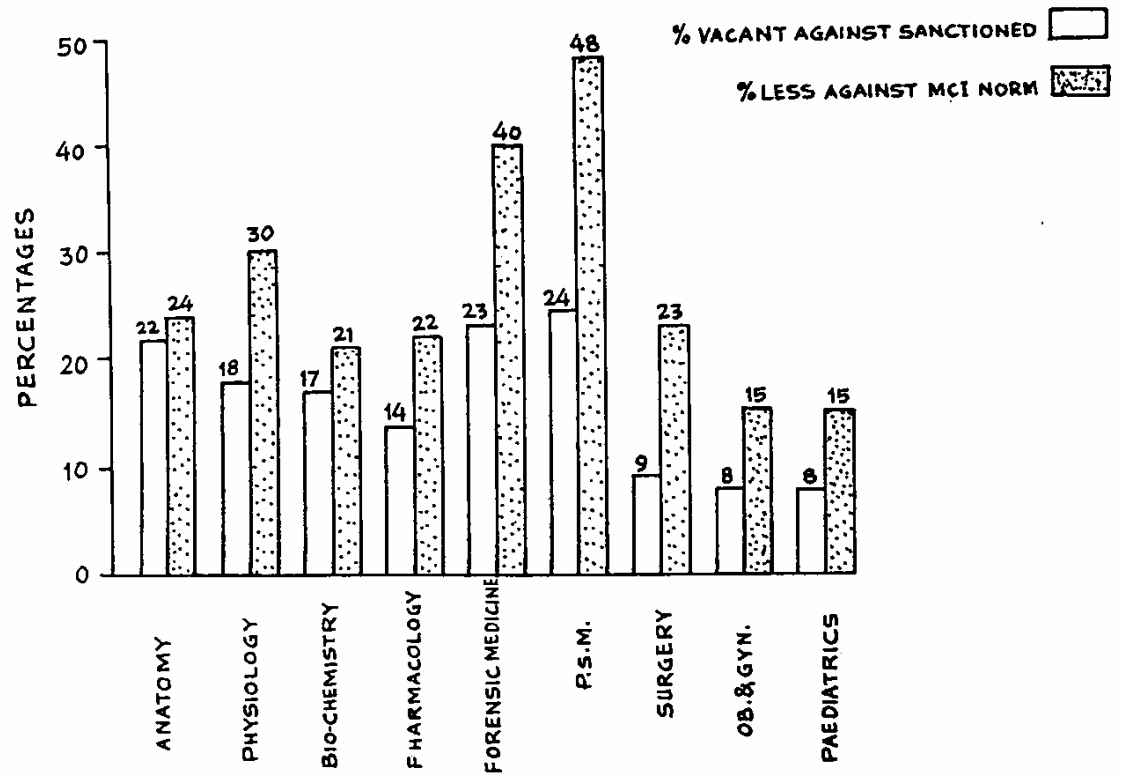


Fig. IV

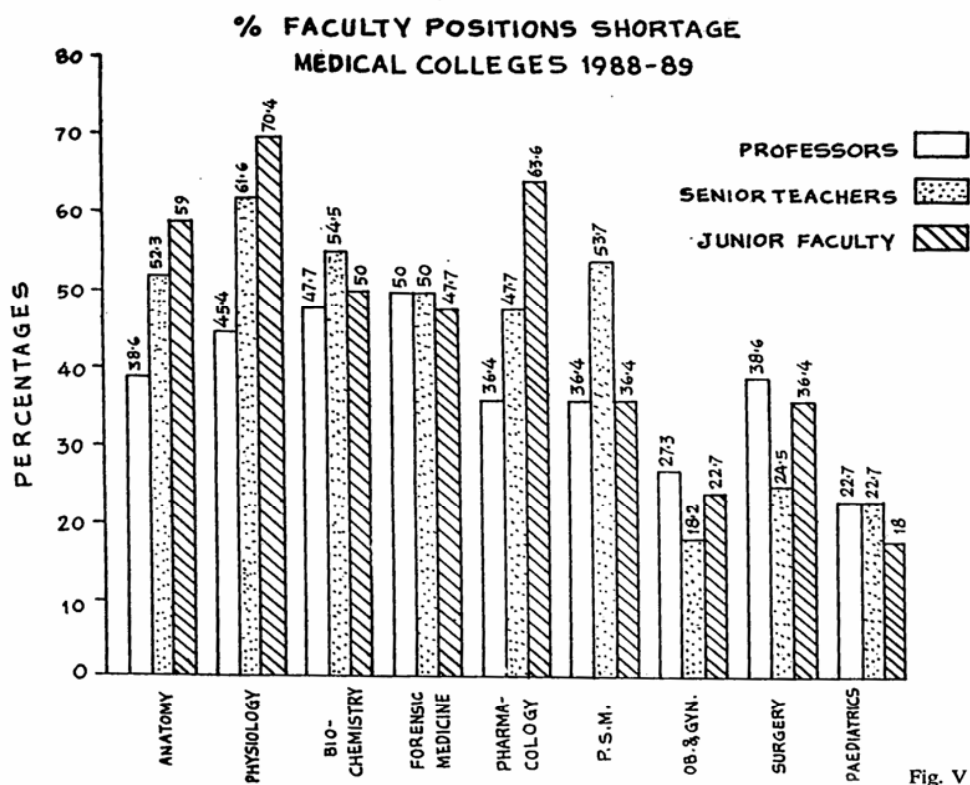


Fig. V

There was a glaring shortage of facilities at the Rural and Urban Health Centres of all colleges so far as the maternity and tubectomy services are concerned.

The element of imparting knowledge was well covered. However, training in application and practical skills was missing. Some of the reasons were:

- i. Apprehension of faculty to give enough freedom to interns to undertake procedures like IUD insertions, vasectomy, immunisation sessions, and to undertake other field operations all by themselves.
- ii. Lack of coordination between community medicine departments, Medical Officers of PHCs and the district authorities.
- iii. Lack of support from senior faculty to young enthusiastic faculty.
- iv. Lack of Learning Resource Materials (LRM), self-learning materials and all kinds of teaching aids.
- v. Lack of procedures by which material on national programme could reach the departments as LRMs for the UGs.
- vi. Lack of recognition to community and family welfare activities as indicated by the number of awards available to the students in area of MCH and FW.
- vii. Lack of training in health management at UG level.

Recommendations for Improving the Undergraduate Training in MCH and FW

I. *Actions at Medical Colleges Level*

A. *General*

1. The urgency of achieving the HFA goals for Primary Health Care and NRR-I should be infused in the Dean's, Principals and faculty of the colleges. The institutional goals may be revised accordingly.
2. The Departments of Ob. and Gyn., Paediatrics and Community Medicine should be provided with optimum teaching staff and other resources including transport.

3. The schemes like ROME, PPP, UIP should be treated as institutional schemes and not departmental activities. Training in MCH through these schemes should be formalised and not left adhoc as at present. In this respect the Dean/Principal should also establish links with the DHS, CMOs and Municipal Health Officers and maintain a mutual dialogue.
4. For rural and district posting it should be ensured that both students and faculty reside at the PHC/district for a defined period of time and daily movement of either of them should not be permitted.
5. More of district and State level health administrators should be invited to participate in integrated teaching for national health programmes, MCH and FW.
6. Adequate AV aids particularly the overhead projectors should be made available in the classrooms and at rural and urban teaching rooms.

B. *Specific*

1. Medical colleges should introduce a competence-based teaching in each subject to the undergraduates particularly in MCH and FW. To reinforce the training a block of one week at the end of each phase, pre-clinical and para-clinical and clinical should be allocated for intensive integrated grilling in MCH and FW.
2. The internship should be restructured to make it skill and service-oriented with modular training in management of primary health care, MCH and FW and national health programmes.
3. As a radical measure, restructuring the entire curriculum making it need-based suiting the definition of 'basic doctor' as defined by the MCI should be done. *The* pre-clinical and para-clinical phase may be reduced to 2 semesters only. See (Fig. X, XI)
4. A block of management training which includes team building, leadership, personnel management, materials management, management information system, communication and elements of hospital administration should be introduced in the last semester of clinical phase.

5. More of visual training should be given. Colleges should acquire video cassettes for self-learning and demonstrations. Thus teaching time in dissection and surgical procedures can be better utilised.
6. Each discipline must establish a list of minimum practical skills that a student must learn at the end of the posting, e.g. each student must know how to give a DPT or prescribe oral pills.
7. Each college should establish a Medical Education Cell (MEC) for planning, implementation, monitoring and evaluation of training. The functions and structure of MEC has been proposed in Fig. VI-IX.

Actions for MCI

Revision of Curriculum

MCI should redraw the undergraduate curriculum keeping , following points under consideration:

- a. At the outset MCI should draw attention to national goals and the role of basic doctor in achieving those and thus emphasise the importance of MCH and FW.
- b. Reduce the pre-clinical curriculum of anatomy and physiology, bio-chemistry, pharmacology and forensic medicine to basic minimum and allocate more time to training in priority areas.
- c. The forensic medicine may give more emphasis for MCH and FP procedures and actions, as this subject has practical importance and the examination should be taken to the final year.
- d. The mark allocation for subjects of Ob+Gyn.+ Paediatrics + Community Medicine should be increased to the level of medicine and surgery. There should be a separate examination in paediatrics. See Fig.X and XI-.
- e. The final examination of PSM/community medicine must be placed at the end of final phase universally.

PROPOSED ORGANOGRAM OF A MEDICAL EDUCATION CELL

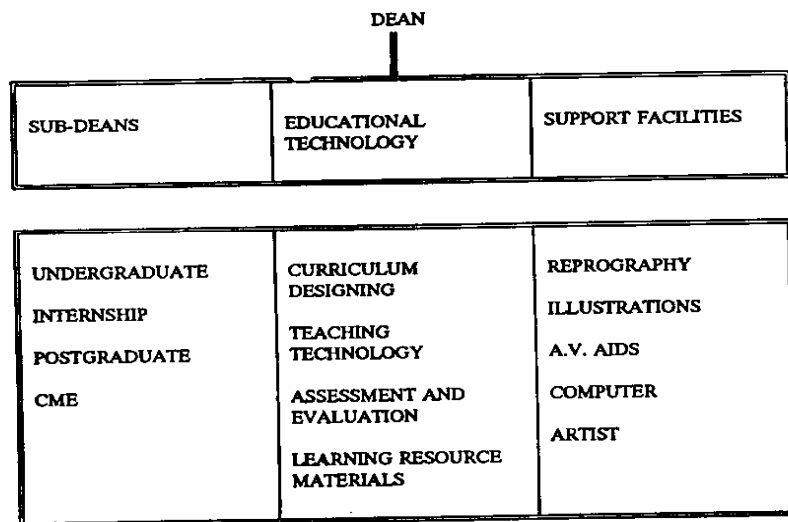


FIG. VI

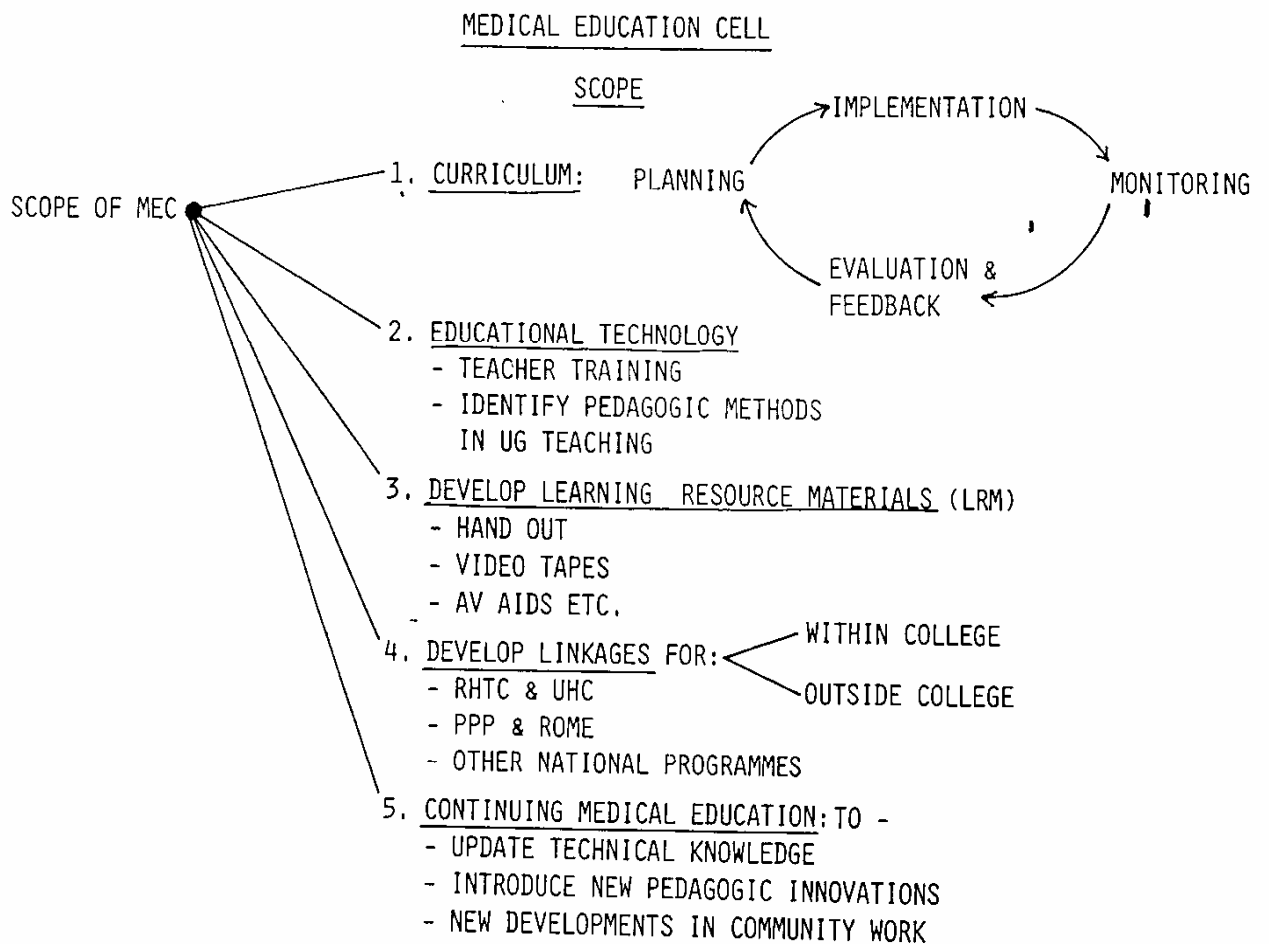


Fig. VII

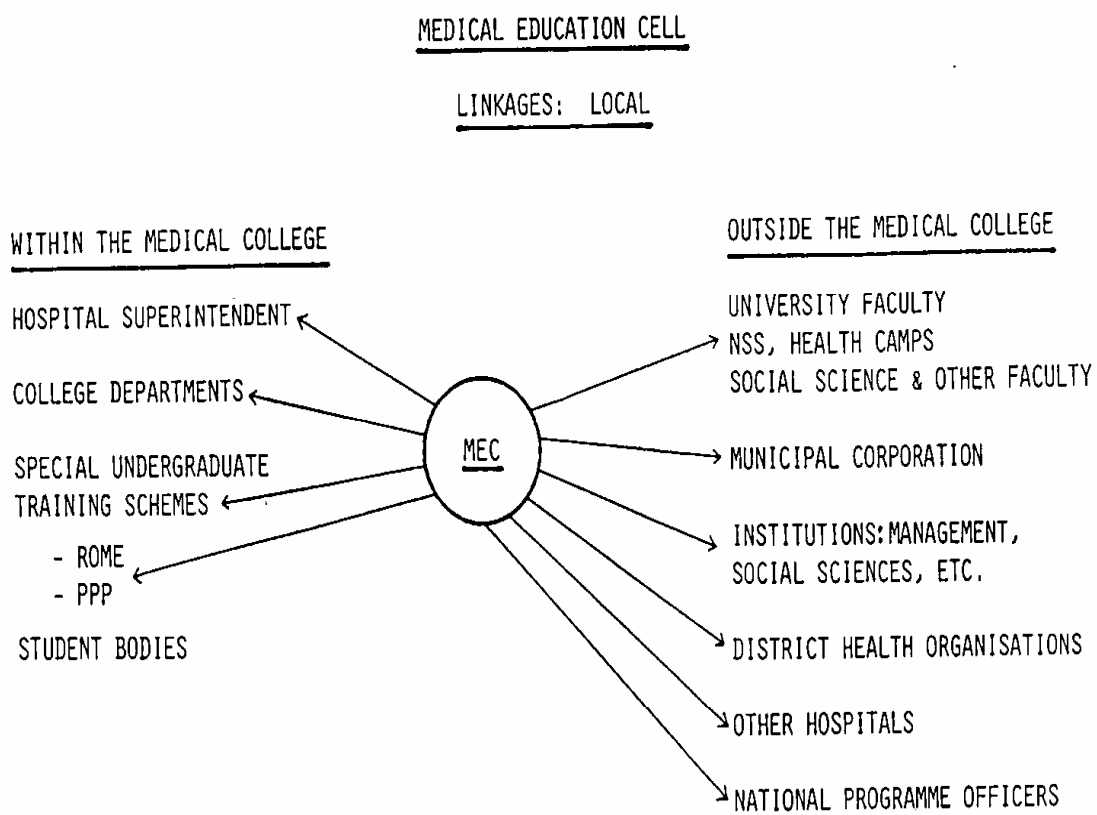


Fig. VIII

MEDICAL EDUCATION CELL

LINKAGES

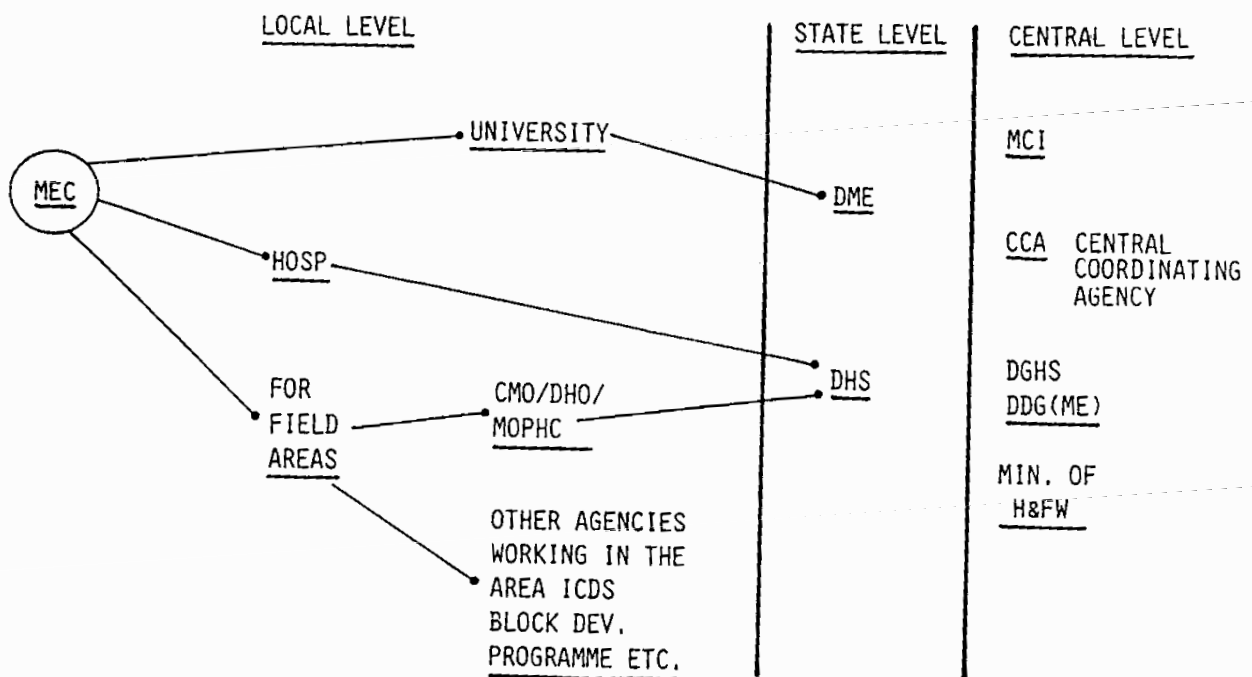


Fig. IX

EXISTING MCI PATTERN

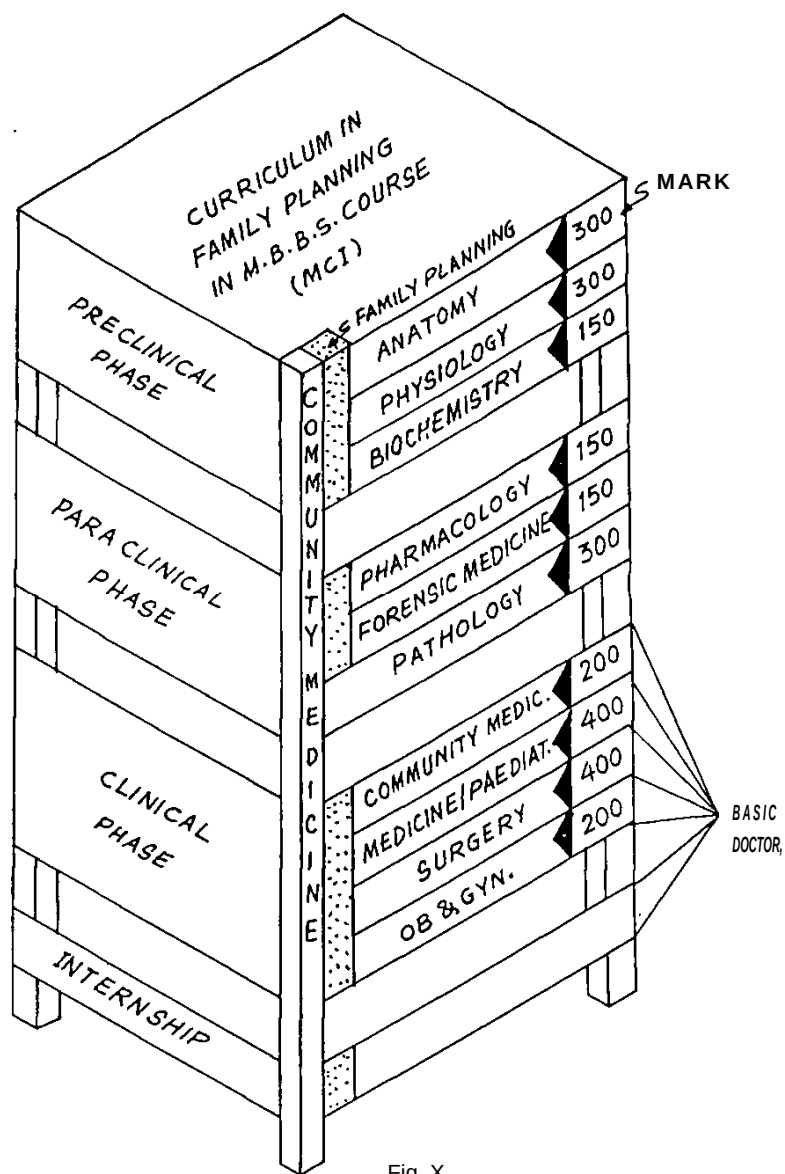


Fig. X

PROPOSED MARK - ALLOCATION AND PLACEMENT OF THE SUBJECT

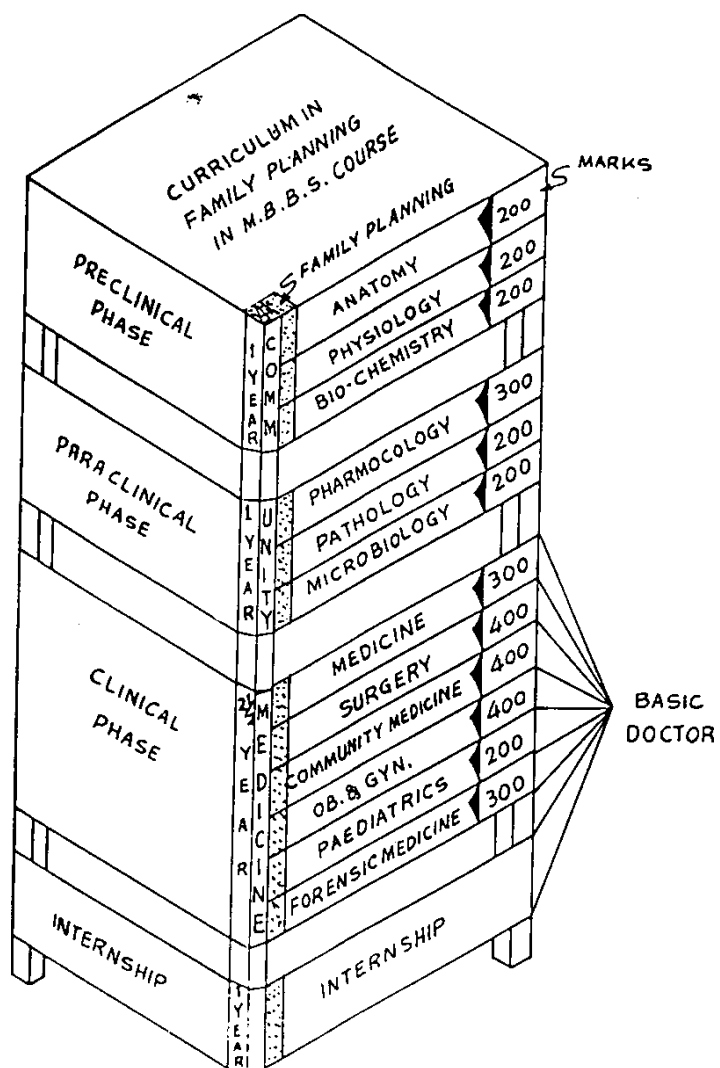


Fig. XI

- f. More specific guidelines should be spelled out by the MCI for:
 - Minimum quantum of skills in each subject.
 - Minimum number of procedures like normal delivery IUD, oral pill, tubectomy, M.T.P. to be conducted and observed.
 - Methodology of assessment and final examination.
2. Specific and more stringent rules should be formulated for implementing and evaluating internship. The district and rural posting should include training in health management.
3. No PG entrance test should be allowed to be undertaken during internship.
4. The norms for allocation of beds to OBGYN and Paediatrics should be revised and raised.
5. The community medicine/PSM should be designated as clinical discipline and the beds attached to PHC, RHTC and UHC should be attached to the department strength. The faculty strength should be raised by 20 per cent in PSM, Ob. and Gyn. and Paediatric departments because of multiple locations of training at district, rural and urban health centre levels.
6. MCI should not allow increase in the intake of students under any pressure till the commensurate number of beds and teaching staff is not added.
7. The MCI should recommend that all Lecturers/Asstt. Professors should undergo teachers training course before being promoted to Reader/Assoc. Professor. Commensurate support structure for teacher training facilities must be planned.
8. The MCI must ensure that each medical college has established a Medical Education Cell (MEC) for planning and administration of curriculum and monitoring and evaluation of training. A prototype of MEC structure and its functions formulated with the help of medical college faculty are annexed in Fig. VI to IX.

9. *Monitoring of Training by the MCI:* Besides conducting the inspection of the institutions for their recognition, it is equally important to develop a supervisory and monitoring mechanism to ensure proper standard of teaching. MCI may establish a monitoring unit. The MEC should send a quarterly report to the monitoring unit of MCI. Thus establishment of a MEC in each medical college should be a pre-requisite for its recognition by the MCI.

III. *Actions for Ministry of Health and Family Welfare and State Health Departments and Directorates*

1. The medical education should be administered jointly by the Ministry of Health and Family Welfare. Such an integration will ensure better emphasis on MCH and FW in undergraduate education and will raise the image of MCH and FW.
2. The central funds for ROME Scheme should be substantially increased. The Ministry of Health and Family Welfare should contribute equally to raising of allocation as major teaching under ROME is in the area of MCH and FW.
3. The educational materials, modules, pamphlets etc. prepared by the Ministry of Health and Family Welfare or DGHS or Rural Health Division should be sent for necessary action to departments of community medicine/Ob.Gyn. and paediatrics of all medical colleges.
4. The State Department of H&FW/University should simplify the procedures of transfer and expedite the recruitment and appointment of college faculty to vacant posts.

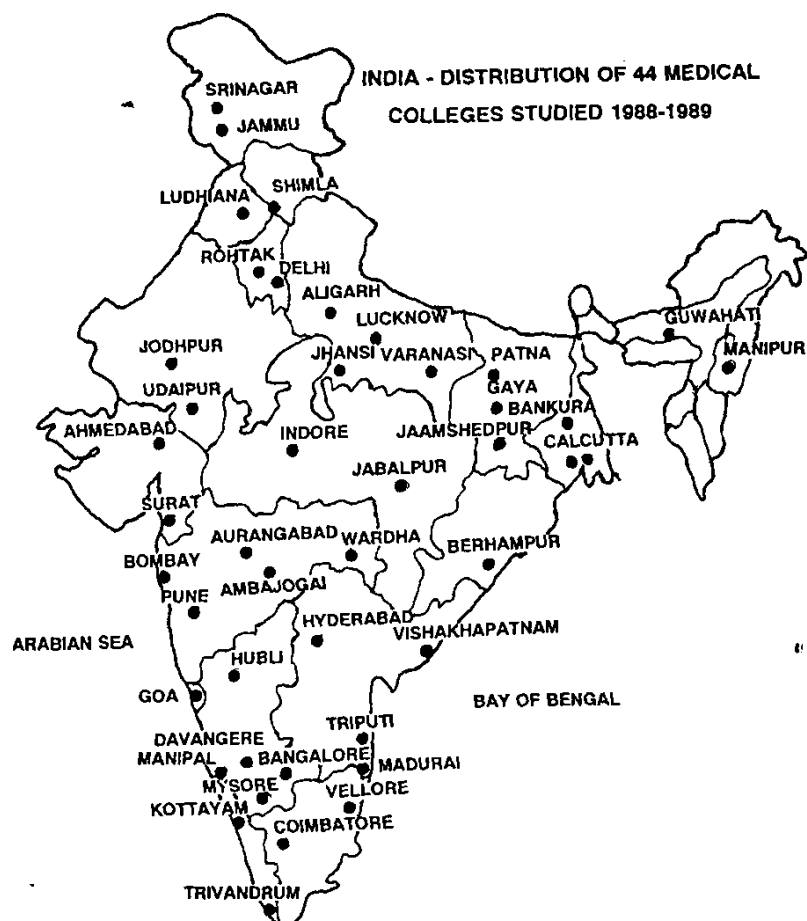
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प्रस्तुत अध्ययन का संचालन देश के 44 मेडिकल कालेजों में से रैंडम आधार पर चुने गए सैम्पल पर किया गया था, जिसका उद्देश्य एम बी बी एस अन्डर-ग्रेजुएट पाठ्यक्रम में मातृ-शिशु स्वास्थ्य तथा परिवार कल्याण संबंधी प्रशिक्षण के स्तर का आंकलन करना था। पाठ्यचर्या, प्रशिक्षण तकनीकों और सीखने के अवसरों आदि से

संबंधित आंकड़े पर्यवेक्षणों और प्रश्नावलियों की सहायता से एकत्र किए गए थे। प्राप्त आंकड़ों से पता चलता है मेडिकल कालेजों में मातृ-शिशु स्वास्थ्य तथा परिवार कल्याण को एक राष्ट्रीय मुद्दे के समान महत्व और प्राथमिकता नहीं दी जाती है। मेडिकल कालेज के संकाय सदस्यों को मातृ-शिशु स्वास्थ्य पढ़ाने वाले विभागों में स्टाफ की कमी है। श्रव्य-दृश्य उपकरणों तथा परिवहन आदि जैसी प्रतिक्रिया सुविधाएँ बहुत ही कम हैं। मेडिकल कालेजों का संकाय शैक्षिक टेक्नोलॉजी से पूरी तरह अवगत नहीं है तथा वह अभी भी पढ़ाने के पारम्परिक तौर-तरीकों को ही अपनाये हुए है और अधिकतर कालेजों में पाठ्यचर्या निर्धारण संबंधी समितियाँ तक नहीं हैं। एम बी बी एस पाठ्यक्रम को यथाशीघ्र परिशोधित करने की आवश्यकता है जिससे मातृ-शिशु स्वास्थ्य तथा परिवार कल्याण विषय पर उचित ध्यान दिया जा सके।

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**STATEWISE DISTRIBUTION OF MEDICAL COLLEGES STUDIED (PERIOD
OF STUDY: FEBRUARY 1988-AUGUST 1989)**

STATES & COLLEGE		AFFILIATED UNIVERSITY
ANDHRA PRADESH		
1.	Osmania Medical College Hyderabad	University of Health Sciences, Vijayawada
2.	Govt. Medical College Vishakhapatnam	University of Health Sciences, Vijayawada
3.	Sri Venketshwar Medical College Tirupati	University of Health Sciences, Vijayawada
ASSAM		
4.	Guwahati Medical College Guwahati	Guwahati University
BIHAR		
5.	Patna Medical College Patna	Patna University
6.	M.G.M. Medical College Jameshedpur	Ranchi University
7.	A.N. Magadh Medical College Gaya	Magadh University
GUJARAT		
8.	B.J. Medical College Ahmedabad	Gujarat University

- | | | |
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| 9. | Govt. Medical College
Surat | South Gujarat
University |
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HARYANA

- | | | |
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| 10. | Govt. Medical College
Rohtak | M.D.University |
|-----|---------------------------------|----------------|

HIMACHAL PRADESH

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| | | HimachalPradesh
University |
| 11. | Indira Gandhi Medical College
Shimla | |

J&K

- | | | |
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| 12. | Govt. Medical College
Jammu | Jammu University |
| 13. | Govt. Medical College
Srinagar | Kashmir University |

KARNATAKA

- | | | |
|-----|--|----------------------|
| 14. | Govt. Medical College Mysore | Mysore University |
| 15. | Kasturba Medical College Manipal | Mangalore University |
| 16. | Karnataka Medical College
Vidhya Nagar, Hubli | Karnataka University |
| 17. | J.J.M. Medical College
Davangere | Mysore University |
| 18. | M.S. Ramaiah Medical Teaching
Hospital, Bangalore | Bangalore University |

KERALA

- | | | |
|-----|-------------------------------|---------------------|
| 19. | Medical College
Trivendrum | Kerala University |
| 20. | Medical College
Kottayam | Gandhiji University |

MADHYA PRADESH

- | | | |
|-----|-----------------------------------|-----------------------------|
| 21. | M.G.M. Medical College
Indore | D.A. Vishwa Vidyalaya |
| 22. | Govt. Medical College
Jabalpur | Rani Durgawati
Vidyalaya |

MAHARASHTRA

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|-----|---|-----------------------|
| 23. | Armed Forces Medical
College Pune | Pune University |
| 24. | LT.M. Medical College
Sion, Bombay | Bombay University |
| 25. | Swami R.N. Teerath Rural
Medical College,
Ambajogai | Marathwada University |
| 26. | Govt. Medical College
Aurangabad | Marathwada University |
| 27. | M.G. Institute of Medical
Sciences Ward ha | Nagpur University |

MANIPUR

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|-----|------------------------------------|--------------------|
| 28. | Regional Medical College
Imphal | Manipur University |
|-----|------------------------------------|--------------------|

ORISSA

29. M.KC.G. Medical College Ganjam Berhampur University

PUNJAB

30. C.M.C. Ludhiana Punjab University

RAJASTHAN

31. Dr. S.N. Medical College Jodhpur Rajasthan University
32. R.N.T. Medical College Udaipur Rajasthan University

TAMIL NADU

33. Stanley Medical College Madras *Madras University
34. Christian Medical College Vellore *Madras University
35. Coimbatore Medical College Coimbatore *Bharthiar University

UTTAR PRADESH

36. K.G. Medical College Lucknow Lucknow University
37. J.N. Medical College Aligarh Aligarh Muslim University
38. M.L.B. Medical College Jhansi Bundelkhand University

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|-----|---|-----------------------------|
| 39. | Institute of Medical Sciences
Varanasi | Banaras Hindu
University |
|-----|---|-----------------------------|

WEST BENGAL

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|-----|----------------------------------|---------------------|
| 40. | Medical College
Calcutta | Calcutta University |
| 41. | N.S. Medical College
Calcutta | Calcutta University |
| 42. | B.S. Medical College
Bankura | Calcutta University |

DELHI

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|-----|-----------------------------------|---------------------|
| 43. | M.A. Medical College
New Delhi | University of Delhi |
|-----|-----------------------------------|---------------------|

GOA

- | | | |
|-----|-------------------------------|-------------------|
| 44. | Goa Medical College
Panaji | Bombay University |
|-----|-------------------------------|-------------------|

*Now M.G.M.....

COST EVALUATION OF MEDICAL GASES FACILITY AT A TERTIARY CARE TEACHING MEDICAL INSTITUTE

Syed Amin Tabish* and Gh. Jeelani Qadiri**

ABSTRACT

The unit cost of medical gases according to the study conducted in a tertiary care teaching medical institute which has a well organised manifold section, is that the hospital has to spend Re. 0.59 per patient per day. Medical gas facility is one of the important cost centres of the institute as it is a major service support having direct relationship with the key areas engaged in providing effective and efficient patient care.

Piping system for oxygen, nitrous oxide, air and vacuum are found in all modern hospitals. Oxygen is used primarily for inhalation therapy and for anaesthesia. Constant supply and immediate availability throughout the hospital are essential.

Nitrous oxide is safest anaesthetic. Together with oxygen it act? as the vehicle for stronger anaesthetic vapours, when inhaled it produces loss of sensibility to pain, followed by unconsciousness.

Vacuum serves to remove fluids from incisions and body cavities and is used in post-operative drainage. Vacuum is generally supplied by two or more vacuum pumps.operating through a suitable receiver.

Compressed air tubes or the installation of central compressors (compressed air must be filtered and dry) is required in some areas of the hospital. The primary use of piped breathing air is for inhalation therapy, and in operation rooms and intensive care units.

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The proper planning and design of these life support systems is essential if the quality of patient therapy, safety and systems performance are to be improved. Great care is needed in their installation, use and maintenance.

OBJECTIVE

To find out the unit cost of medical gases at a tertiary care teaching medical institute.

MATERIALS AND METHOD

The hospital is a tertiary care organisation engaged in patient care, post-graduate teaching and research activities. The institute consists of massive complex of building, teaching units, research laboratories, generalised and specialised clinical services. The support services (including medical gases section) are unique in their facilities/organisation layout and offer excellent services for the maintenance of essential supplies.

The equipment cost was obtained from the import/purchase sections of the institute. The equipment has given uninterrupted services for more than ten years now, and most of it continues to function satisfactorily. Depreciation cost has been worked out at the rate of 10 per cent per year.

Labour cost was computed after obtaining the data from management information services.

Material and maintenance costs were obtained from the records being maintained in the manifold (medical gases) section of the hospital.

The rental value of the space occupied by the medical gas section, however, have not been taken into consideration.

Since the hospital has at present 425 functional beds with 85 per cent bed occupancy rate, the expenditure incurred on providing medical gases per patient' per day have been computed for all the functional beds.

Average costing technique has been adopted to workout the unit cost of the service.

OBSERVATIONS

Medical gases (manifold) facility is one of the important cost centres of the

institute as it is a major service support having direct relationship with the key areas engaged in providing effective and efficient patient care.

A. Capital Cost of Medical Gases (Manifold) Facility

1. Oxygen

Supply and installation of 2x16x68 cu.m. cylinders manifold and pipeline system to cater to 55 self-sealing and 25 branch installation valve points in the operation theatre block and supply and installation of 2x12x68 cu.m. cylinders manifold and pipeline system to cater to 84 self-sealing installation valve points in the ward block

= Rs.4, 16,000

2. Nitrous Oxide

Supply and installation of 2x8x16 bulk cylinders manifold with nitrous oxide control panel complete with emergency service point and distant signal unit together with pipeline system culminating at 23 self-sealing and 25 number branch isolation valve points in operation theatre

= Rs. 1, 38,000

3. Compressed Air

Supply and installation of 2x8 bulk cylinders compressed air manifold with control panel complete with emergency service point and pipeline system culminating at 24 self-sealing and 25 numbers branch insulation valve points

= Rs.1, 32,000

Compressing station equipment

= Rs.6, 91,000

Suction

Supply and installation of 3 vacuum pumps having reservoir tank and assembly, automatic switch gears and pipeline system culminating at a total of 189 outlet points

= Rs.4, 58,000

Cost of accessories for use with centralised pipeline system for medical gases

= Rs.3, 23,000

Total

Rs.21, 58,000

B. Expenditure on Gas Cylinders and Accessories

Cost of 144 empty H.P. oxygen cylinders of 7000 litres gas capacity	Rs.2,08,516
Cost of Accessories	Rs. 14,660
Cost of one IOL-20 air compressor	Rs.2,35,000
Cost of one air suction filter	Rs.5,000
Cost of one silica gel drier heater C/W regeneration heater	Rs.3,00,000
Cost of one 2x6 point cylinder filling manifold	Rs.24,000
Cost of one set LP/HP air pipe work	60,000
Cost of one set cylinder test shop equipment	Rs.67,000
Cost of rubber tubing, flow meters, ward vacuum units, theatre suction unit, safety keyed plug, emergency sets, kit conversion, hose, ferrule	Rs.3,50,824
Total	Rs.12,65,000

Total cost of the equipment = Rs.34,23,000

Statement Showing the Quantity of Gas Cylinders**A. Oxygen**

1.	Oxygen cylinders of 7000 litres capacity (bull nose type), 7M ³	112
2.	Oxygen cylinders of 623 litres capacity (pin index)	204

3.	Oxygen cylinders of 1650 litres capacity (bull nose type)	120
B.	Nitrous Oxide	
i.	Nitrous oxide cylinders of 16000 "Nitres capacity (bull nose type)	32
ii.	Nitrous oxide cylinders of 955 litres capacity (pin index type)	204
C.	Compressed Air	
	Compressed air cylinders of 7000 litres capacity (pin index type)	32
D.	Carbon Dioxide	
	C° 2 cylinders of 625 litres capacity (pin index type)	40

Statement Showing Distribution of Gas Cylinders in Various Patient Care Areas

1.	Oxygen	
a.	Theatre Block Manifold (2x16x7M ³ capacity oxygen cylinders)	64
	- 32 cylinders in use	
	- 16 cylinders in reserve	
	- 16 cylinders in circulation	
b.	Ward Block Manifold (2x12x7M ³ capacity cylinders)	48
	- 24 cylinders in use	
	- 12 cylinders in reserve	
	- 12 cylinders in circulation	
	Total No. of Bull Nose Type Cylinders (7M ³ capacity)	112

2. Nitrous Oxide

Capacity 2x8x1600 of cylinders

- 16 cylinders in use
- 8 in reserve
- 8 in circulation Quantity: 32

3. Compressed Air

Capacity: 2x8x7M³
Quantity: 32

(16 in use, 8 in reserve and 8 in circulation)

Standby

- | | | |
|----|---------------------------|-----|
| 1. | For Operation Theatre | |
| | *Pin index type cylinders | |
| | - oxygen | |
| | (623 litres capacity) | 204 |
| | - Nitrous Oxide | |
| | (955 litres capacity) | 204 |
| 2. | For Ward Block | |
| | *Bull nose type cylinders | |
| | with 1850 litres capacity | 120 |

Evaluation

Depreciation Cost	Rupees
Total initial cost of the equipment	34,23,000
Depreciation cost for ten years (@ of 10%)	3,42,300
Depreciation cost per annum	34,230
Depreciation cost per month	2852.5
Depreciation cost per day	95.7
Materials Cost	
Expenditure per annum on medical gases	8,39,085
Expenditure on transportation per annum	2,71,355
Total annual expenditure	11,10,440

Expenditure per month	92,537
Expenditure per day	346

Maintenance Cost

Expenditure per annum	1,10,000
Expenditure per month	9166.7
Expenditure per day	305.5

TABLE 1
YEARLY CONSUMPTION STATEMENT OF MEDICAL GAS CYLINDERS

year	Oxygen Bulk (6.8) M³	Oxygen Med. (1.34)M³	Oxygen Pin. (1.64)M³	Nitrous Oxide Bute (16500) Litres	Nitrous Oxide (1700) litres
1988 January to December	6765 cylinders	1202 cylinders	1254 cylinders	74 cylinders	562 cylinders
1989 January to December	6825 cylinders	376 cylinders	1104 cylinders	123 cylinders	345 cylinders
1990 January to December	7280 cylinders	92 cylinders	792 cylinders	88 cylinders	352 cylinders*
1991 January to December	7649 cylinders	256 cylinders	1299 cylinders	125 cylinders	444 cylinders
1992 January to December	7330 cylinders	247 cylinders	1315 cylinders	195 cylinders	495 cylinders
1993 January to December	6182 cylinders	188 cylinders	1508 cylinders	140 cylinders	577 cylinders

TABLE 2
SHOWING TOTAL NUMBER OF ADMISSIONS AND SURGERIES (YEARWISE)

Year	Running Cost	Salaries	Maintenance Cost
1988	1. Medical Gases Rs.5,73,401/- 2. Transportation Rs. 2,29,956/-	Rs.96,000/-	Rs.30,907/-
1969	1. Medical gases Rs. 6,06,470 2. Transportation Rs.1,19,313/-	Rs. 1,62,000/-	Rs.20,000/-
1990	1. Medical gases Rs. \$.59,754/- 2. Transportation Rs,7,11,288/-	Rs.1,74,000/-	Rs. 1,47,482/-
1991	1. Medical gases Rs.11.61,041/- 2. Transportation 2,00,005/-	Rs. 1,99,000/-	Rs. 1,99,000/-
1992	1. Medical gases Rs.8,39,085/- 2. Transportation Rs.2,71,355/-	Rs.2,32.000/-	Rs. 1,10,000/-
1993	1. Medical gases Rs. 8,34,634/- 2. Transportation Rs.1,67,327/-	Rs. 2.29,000/-	Rs. 80,000/-

TABLE 3
SHOWING TOTAL NUMBER OF ADMISSIONS AND SURGERIES
(YEARWISE)

Year	Admissions	Operations
1988	11,924	3,417
1989	15,795	4,495
1990	11,195	2,797
1991	12,781	3,465
1992	13,854	4,761
1993	14,192	3,446

Labour Cost	Rupees
Expenditure on personnel working in manifold associated with medical gases (per annum)	= 2,40,000
Expenditure per month	= 24166.6
Expenditure per day	= 85.5
Summary of Dally Expenditure	
Expenditure on material	= 346
Expenditure on depreciation (of equipment)	= 95.7
Expenditure on maintenance	= 305.5
Labour cost	= 85.5
Grant Total	= 251.3
Total number of functional beds in the hospital	= 425
Daily expenditure on medical gases	= 251
Expenditure of medical gases per patient per day	= 0.59

CONCLUSION

The hospital has to spend Rupee 0.59 on medical gases per patient per day. Since unit cost studies on medical gases are not available in developing countries like India, as such it is not possible to compare the results. One cannot infer whether the expenditure (unit cost) on gases is lower/higher/reasonable as the standards are yet to set.

Lkkjk'k

बहु विभागों वाले तथा तृतीयक स्तरीय परिचर्या सेवा प्रदान करने वाले एक सुसंगठित मेडिकल संस्थान में संचालित इस अध्ययन से पता चलता है कि मेडिकल गैसों का अस्पताल को रू०— 0.59 प्रति रोगी प्रतिदिन खर्च करने पड़ते हैं। मेडिकल गैस सुविधा इस प्रकार के संस्थानों में लागत की एक महत्वपूर्ण इकाई होती है, क्योंकि यह एक महत्वपूर्ण सेवा समर्थक इकाई है तथा इसका सीधा सम्बन्ध प्रभावकारी और कुशल रोगी परिचर्या से होता है।

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