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**INTRODUCTION OF CONTRACEPTIVES IN NATIONAL FAMILY
PLANNING PROGRAMME : INJECTABLES
AND IMPLANTS**

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ABSTRACT

Family Planning Programme needs a variety of reversible spacing methods. The acceptability and continuation rates of contraceptives are influenced by various factors such as intrinsic character of the method, individual and social acceptability, providers knowledge, skill and attitude., effective communication, appropriate delivery system and cost..Experience gained from clinic-based trials does not provide adequate guidelines and preparations for programme operations. This is particularly true in cases of injectables and implants. Before introducing a new contraceptive in a mass programme, adequate planning and preparation, and conduction of field trials along the line of operations research is most vital for development of programme operation guidelines. To avoid delay, such operations research studies may be undertaken parallel with the clinical studies. The principles and approaches discussed in this paper are also applicable for promotion of acceptance and continued use of currently available contraceptives.

Introduction

Uncontrolled growth of population is the most urgent problem in the country and population stabilisation programme has the top priority. At present, India's population is about 700 million, and there is nearly 120 million couples in the reproductive age group. According to a current estimate, about 26 per cent of the eligible couples are being protected by the contraceptive practice. Out of these, about 23 per cent have accepted sterilisation, and the remaining use other methods

including conventional contraceptives, intrauterine devices (IUDs) and oral pills. It may be pointed out that the majority of the acceptors of sterilisation have already three or more children. The Expert Group have stated that for achieving a Net Reproduction Rate of one by the year 2000 A.D., 60 per cent of the eligible couples have to be effectively covered. This itself is a great task. Furthermore, for better demographic impact larger proportion of couples should accept and practice spacing methods. In a recent study by the World Fertility Survey in 29 developing countries, it has been noted that the infant mortality rate was two and a half times higher among the babies born within an interval of less than two years compared to those born after a gap of four years. Reduction in infant mortality through spacing will further promote family planning acceptance. A large number of reliable spacing methods are available and are being used extensively in different parts of the world. In Japan about 80 per cent of family planning acceptors use condoms, whereas more than 50 per cent of the acceptors in China use IUD. Hormonal contraceptives also hold good promise as a spacing method.

More than 50 million women in the world are presently using oral pills. Contraceptive prevalence survey shows that in some developed countries as many as 46 per cent of married women were using oral pills. In some developing countries the prevalence rate ranged from 2 per cent to 20 per cent. Studies have shown that pill is not only the most effective reversible method, but it also provides protection against pelvic inflammatory diseases, ectopic pregnancy, endometrial and ovarian cancer, and gives relief from a wide range of menstrual disorders. For various reasons oral pills have not become popular in our country. One of the main reasons is the inconvenience of daily intake of pills, for which strong and sustained motivation is needed. In this regard, the long-acting hormonal contraceptives such as injectables and implants have many advantages. Injections of a long-acting hormonal contraceptive at intervals of 1, 2 or 3 months provide highly effective protection. Many women prefer such method and this is being used successfully in the family planning programme of many countries. Subcutaneous insertion of implants (capsules or rods) containing contraceptive steroid hormones may provide protection for 5 years or more.

The overall approach for contraception should be to make best possible use of the currently available methods, to im-

prove upon the existing ones, and to develop and/or introduce speedily new and better methods. There is a great need and scope for promotion of acceptance of all spacing methods. This presentation, however, will be restricted primarily to injectables and implants. Nevertheless, the basic principles enumerated and the approaches suggested in this paper would also be applicable to other contraceptives to be introduced in a mass programme.

Before considering introduction of any new method including injectable and implant contraceptives in a mass programme, various factors and issues which affect contraceptive acceptance, practice and continuation rate need to be considered seriously. Experience gained from clinic-based trials is not adequate from the point of programme operations. Many other factors which do not exist in well controlled clinical trial situation become crucial for success in a mass programme. Without careful planning and preparation, the new methods may be poorly accepted and the dropout and pregnancy rates may be unacceptably high. This in turn may also damage the reputation of the family planning programme. After proper planning and preparation, the method may be introduced in a limited scale at first, and on the basis of the experience gained it may be introduced into other areas in an incremental fashion.

Factors Influencing Acceptance and Continued Use of Contraceptives

The acceptability of any contraceptive in a community can be judged by its continued use. This is influenced by various factors such as (1) the intrinsic character of the method, (2) individual and social acceptability, (3) providers knowledge, skill and attitude, (4) effective communication, (5) appropriate delivery system, and (6) cost.

Intrinsic character of the method-. The intrinsic characters of a particular method, which affect the acceptance and continuation rate etc., are (a) medical safety, (b) effectiveness, (c) side-effects, (d) ease in continuity of use and (e) easy reversibility.

Individual and social acceptability. Acceptability is a quality which makes the object or idea attractive, satisfactory, pleasing and adaptable. Acceptability centres around perception of an innovation based on clusters of perceived attributes. In

carefully conducted studies, ideally involving a combination of survey research and measures of actual behaviour, some prediction of the types of acceptors, rate of acceptance, and rate of continuation for method should be possible. Circumstances surrounding acceptance can also be identified.

Contraceptive research has not adequately considered the different circumstances in which the new methods of contraception are to be used. In a difficult setting related to manpower, administration, transportation, health care and communication system, costly means requiring highly developed delivery system or re-supply system is not likely to succeed. From different studies, important specifications for individual and social acceptability of contraceptive methods have been identified. These are: (a) socio-economic development status; (b) cultural values, perceptions and practices in regard to menstruation and its alterations, small family norm, contraception etc., (c) nature and type of the contraceptive need; (d) accessibility and credibility of the service giving agency; (e) past experiences; (f) whether the method is to be used by male or female partner; (g) duration of effectiveness; (h) probability and ease of reversibility; (i) to be used during coitus or not; (j) mode of administration *i.e.* oral, local or surgical; (k) frequency of use; (l) safety and side effects; (m) contraceptive effectiveness; (n) need for continued motivation; and (o) peer approval of the method.

Providers' knowledge, skill and attitude: The knowledge, skill and attitude of the providers, may they be the physicians or non-medical health auxiliaries, play very important role in the acceptance and continued use of contraceptives. From the field experience it is noted that many a times the doctors and the paramedical staff lack proper knowledge, skill and faith or confidence in particular methods. Under the circumstances, they cannot educate and motivate the clients properly; neither they can allay the fears and doubts and provide reassurance. This point out the great importance of education, training and motivation of service providers.

Effective communication: For a fully developed family planning programme, three components are essential: (a) providing efficient clinical services; (b) personal communication - during clinic and hospital visits, home visits, group meetings, formal and informal discussion sessions and through organisations such as labour unions, political and voluntary social organizations

etc.; and (c) public or mass communication - through newspapers, magazines and periodicals, radio, television, film strips and slides, printed material such as books, pamphlets, bulletin, posters etc. Other channels of public communication are through teaching materials, songs and other miscellaneous means such as telephone directories, messages on the tickets, match boxes and other utility goods. It is important to choose the means of communication appropriate to local resources and to the message to be delivered.

Except for certain cultural differences, the family planning messages to the clients and to the people in the community are fairly standard from one place to another and from one country to the other. The messages are usually on: what is family planning; why family planning; how to achieve family planning; where and when to obtain advice for clinical services or material etc.; who is to provide necessary advice and guidance and what is his/her competence. While securing effective communication in family planning the worker should assure and reassure potential clients. They must also be able to recognise signs of various barriers and simultaneously avoid developing barriers.

The goal of family planning worker is to: (i) supply necessary information for education and motivation, (ii) assist the client to evaluate contraceptive information and services, and to make an informed choice and decision about them, and (iii) encourage them for continuing contraceptive use.

Appropriate delivery system; This should take into consideration the easy accessibility? logistics of procurement, storage and supply; technical competence of the providers; physical and monitoring facilities; and technical and administrative capability of the agency for organisation and management of the contraceptive delivery programme.

From the available experience the following general observations may be made: (i) Methods difficult to teach or use are least likely to succeed. Potentials for misuse of even the simplest means of fertility control are often underestimated or misunderstood. Errors in use are responsible for high rate of failure. (ii) With the methods requiring repeated application, it is often difficult to maintain supply of contraceptives to target population. On the other hand, methods requiring one time use or periodic use have many operational

advantages. Thus, the intrauterine devices, hormonal injectables and implants and sterilisation have advantages over other methods. However, it may be pointed out that for IUDs, injectables and implants adequate follow-up would be necessary. (iii) Physician-based services, other than one time methods are usually unrealistic for population in developing countries. Western style health care system, through which contraception services are being delivered, are largely inaccessible to couples. (iv) Use of community workers, paramedical auxiliary staff, indigenous health workers, commercial distribution system are more practicable. Community-based distribution or social marketing can be best utilised among rural population in developing countries.

Cost: The cost of contraceptives sold in commercial sector is out of reach of the majority of people. This may become an important barrier to contraceptive use and self-sufficiency. Original costs and re-supply costs must be considered for new technology.

The safest, most effective and most acceptable means of fertility control will do little good, unless it can be offered to potential clients in a consistent, affordable and convenient fashion. Low cost, simple and ease of delivery by indigenous programme workers are some of the important virtues of contraceptives.

Current Status of Knowledge and Experience with Injectable and Implant Contraceptives'

A. Injectables

Nature, type and use of injectables: Presently available injectables contraceptives are long-acting synthetic progestins or progestogens which may be given at monthly, 8-weekly, 3-monthly and 6-monthly intervals. Two injectable contraceptives are widely available - depot medroxy progesterone acetate (DMPA) and norethisterone enanthate (NET-EN). One or both have been used in about 100 countries. DMPA is usually given in a 3-monthly dose of 150 mg. and in some cases monthly or 6-monthly doses have also been tried. NET-EN 200 mg. is given at 8-weeks intervals or every 8-weeks for the first six months and then every 12 weeks. It is estimated that about 2.3 million women have been using DMPA and about 275,000 women are using NET-EN. From the available information it is noted that injectables

are most widely used in Jamaica, Thailand, New Zealand, Mexico, Sri Lanka, China, Trinidad and Tobago.

Advantages and disadvantages: Both DMPA and NET-EN are highly effective, with pregnancy rates of less than one per 100 women year. However, available experience with DMPA is much more extensive and is of much longer duration. Other major advantages of these injectables are that these eliminate the need for any specific action during coitus or for daily action like taking oral pills, and these are reversible.

The major disadvantage is that these disrupts the normal menstrual cycle, causing irregular bleeding, ammenorrhea of varying duration and occasionally heavy bleeding. However this bleeding does not pose any risk to health. In fact, it reduces the risk of anaemia by overall reduction in blood loss. The injectables have few minor side effects apart from menstrual disturbances, but have also non-contraceptive benefits. DMPA has been reported to increase the supply of breast milk in lactating women, reduce the risk of pelvic inflammatory disease and the symptoms of sickle-cell disease. In the human, no increased risk of cancer has been demonstrated.

Pharmacological considerations: Both DMPA and NET-EN have long duration of action after a single injection. Although the rate of metabolism of both the drugs varies widely among women, NET-EN is metabolised relatively more quickly. As a result, fertility returns sooner and pregnancy risk in the later part of inter-injection intervals is somewhat greater in case of NET-EN.

DMPA is prepared in a microcrystalline suspension and this delays absorption of the hormone. Within one week of injection of 150 mg DMPA, levels of medroxyprogesterone acetate (MPA) reach a peak and serum levels remain elevated for 2 to 3 months and then decline steadily. MPA may become undetectable in the serum as early as 55 days and ovulation may return as early as 73 days after the injection. However, usually MPA remain detectable for 6 months or longer, and ovulation does not resume for 4 months or more.

Unlike DMPA, the NET-EN is prepared in oily solution. As a result, the rate of absorption and release into the circulation may vary widely. Following injection of 200 mg NET-EN, peak serum level of NET is reached in seven days and the

serum levels decline steadily thereafter, and by 2-1/2 to 4 months levels become undetectable.

High effectiveness of the injectables is due to their actions at multiple sites. These inhibit ovulation in most women, alter cervical mucus creating barrier to sperm transport, make the endometrium less suitable for implantation of fertilised ovum, and possibly also affect ovum transport in the fallopian tube.

Effectiveness: From multicentric trials of the WHO, it is noted that the pregnancy rate with standard regimen of DMPA was 0.7, and the 24-month pregnancy rate was only 0.2. On the other hand, with 8-weekly regimen of NET-EN the 24-month pregnancy rate was 0.4 and with the 8/12-weekly regimen the corresponding figure was 1.4. Although the 8-weekly regimen of NET-EN is slightly more effective than the other NET-EN regimen, it involves more frequent injections, greater cost and higher drug load.

Injection guide: Proper technical care is essential during injection for ensuring adequate and uniform dosage. DMPA vials are to be shaken thoroughly before loading in a syringe, otherwise microcrystal sediments would remain in the bottom. The viscous oily solution of NET-EN is difficult to draw in and push out of the syringe. Mild warming of the vial may be helpful. Injections should be given deep intra-muscular and injection site should not be massaged, otherwise drug release may be accelerated resulting in reduction of duration of effectiveness. DMPA is usually injected in the arm and NET-EN in the buttock.

It is recommended that the first dose of the injectables may be administered within the first 5 to 7 day of the menstrual cycle in order to avoid escape ovulation resulting in contraceptive failure and to avoid injection in presence of existing pregnancy. In post-partum women it is to be initiated after the 6 weeks post-partum period is over.

Side-effects: Most common and most troublesome side effects of these injectables are menstrual disturbances, and the other frequently reported complaints are weight gain and headache. There is no effect of DMPA and NET-EN on blood pressure and blood coagulation, and these do not increase the risk of other circulatory system disease. DMPA alters carbohydrate metabolism but does not produce overt diabetes. It may be given to diabetic

women with proper monitoring. DMPA has no permanent effect on reproduction; experience with NET-EN in this regard is limited. Both do not have any adverse effects on lactation and the composition of breast milk. In fact, the users of DMPA particularly may produce more milk. A small quantity of these hormones are excreted in the breast milk and are consumed by the infant. Although data are limited, no adverse effects have yet been reported on such infants. It is recommended that the first injection may be given to the post-partum women six weeks after delivery, as the infants ability to metabolise and excrete the drug is expected to be better developed by that time.

Although some animal studies have raised some controversy whether the injectables produce breast and endometrial cancer, three types of evidence in the human strongly suggest that injectable progestins do not cause cancer in the women. In fact, progestins are used therapeutically, with some success, in certain cases of cancer.

Acceptability and continuation rate-. Acceptance and continuation may vary widely in different population groups, and these depend mainly on the willingness of the users to tolerate menstrual disturbances. In a more recent WHO trial, the continuation rates for both NET-EN and DMPA are similar i.e.48 to 50 per 100 women at one year.

Tolerance of menstrual disturbances varies in different population groups even in the same country. Prolonged amenorrhea and prolonged bleeding cause the most dissatisfaction. Women may tolerate bleeding irregularities better if both the partners are counseled before initiation and repeatedly reassured during continued use. In some women, because of cultural and religious beliefs and practices, amenorrhea as well as prolonged and irregular bleeding can act as formidable barriers. Women may associate amenorrhea with pregnancy, accumulation of "bad blood" in the body causing various ailments, menopause, infertility, onset of old age etc. Once the women are properly assured that they are not pregnant and amenorrhea is not harmful, they tolerate it better and some are even pleased with the absence of menstruation. Prolonged and irregular bleeding may hamper religious practices, sexual intercourse and household and social activities. Proper education of the women with such socio-cultural background can remove these barriers.

Other side effects such as weight gain, headache, abdominal discomforts, anxiety and nervousness do not cause any significant problem for continued use. In fact, weight gain may be beneficial to some women in developing countries.

Management of bleeding: Attempts to prevent bleeding irregularities with routine estrogen supplements have not been satisfactory. In addition, it imposes other drawbacks associated with regular intake of pills and estrogen related side effects such as nausea, dizziness and increased risk of blood clots. Counseling before and during use encourages continued use in cases with spotting, mild bleeding or amenorrhea better than estrogen supplementation.

According to a WHO publication, cases with very heavy or moderate but prolonged bleeding, which occurs infrequently, require medical attention. Firstly, other causes of abnormal bleeding should be ruled out by careful examination. Then to try 25 mg of estradiol three times a day for three days in such cases. If this is not effective and the women had come with complaints of heavy bleeding, inject 5 mg of estradiol cypionate in oil and may repeat once if bleeding does not stop within 24 hours. If bleeding still continues dilatation and curettage may be considered. According to the Upjohn Company, cases with very heavy or prolonged bleeding should be treated with 0.05 to 1 mg of oral ethinyl estradiol for 7 to 21 days. If the bleeding does not diminish in one or two cycles, another method of contraception has to be tried.

B. *Implants*

Nature, type and use of implants: Contraceptive implants, made of silastic hollow capsules filled with hormone or silastic solid rods impregnated with hormone, offer a good possibility of long-term reversible contraception without frequent medical intervention or continual action by the acceptor. Maintenance of continuous and relatively constant release of the hormone from implants, in contrast to the fluctuating hormone levels caused by the injectables and oral contraceptives, is expected to cause fewer side-effects. The factors which may affect the rate of release of hormone from the implants are: the type of hormone used, the surface area of the capsule or the rod, the type and number of implants, characteristics of the individual user etc.

Out of about ten hormones tested over the past two decades three have been found most promising, namely ST 1435, norges-triehone and levonorgestrel. However, because of slow diffusion rate and high degree of efficacy, levonorgestrel has been used and tested in two types of implants developed by the Population Council, New York. Norplant consists of six capsules, each containing 36 mg of norgestrel, and the estimated life of the system is more than 5 years. Norplant II consists of two rods, each containing about 70 mg of levonorgestrel.

Considerable experience has been gained with Norplant capsules being tried in different countries, and these are available for extended field trials. Norplant II comprising of biodegradable rods may have several advantages, but the experience with its use is less extensive.

Pharmacoological considerations: With the Norplant capsules total daily release of levonorgestrel in the first week is about 68 ug, which gradually drops to about 40 **pg** by the end of the first year and 30 **pg** by the end of fifth year. The daily release rate from both rods in Norplant II is about 50 /ig

Insertion and removal of implants: These can be placed beneath the skin of the forearm or upper arm under local anesthesia with the help of a large hypodermic needle using 10 or 11 gauge trocar by a specially trained health worker. Capsules need removal after use, whereas biodegradable rods do not require removal unless the woman desires to become pregnant early. Removal requires small incision in the skin over the implants, under local anesthesia. Implants placed too deeply under the skin, into the muscle, in the buttocks or thigh may migrate and are more difficult to remove.

Effectiveness and reversibility: In two long-term clinical trials with Norplant capsules 3-year pregnancy rates were less than one per 100 women. In one of these studies carried out in Chile on 100 women, continuation rate of five years was 54 per cent. In the larger multicentre trial under the Population Council in six Latin American and Scandinavian countries, the 3-year pregnancy rate was 0.7 per cent.

In the first year of use of the capsules, ovulation occurred in about 10 per cent of menstrual cycles, but subsequently ovulation occurred more frequently. Obviously, the contraceptive actions of progestin given alone are exerted at

multiple sites as mentioned under injectable contraceptives, thus providing effective protection.

After removal of the implants fertility returns readily. In one study, out of 53 women wanting pregnancy 77 per cent became pregnant within one year after removal.

Side effects and their management: Irregular and prolonged bleeding is the most common complaints, and 50 per cent of discontinuation in the first year was due to menstrual disturbances. The incidence and duration of menstrual abnormalities decrease with continued use, and in fact, the average menstrual blood loss may be decreased thus providing beneficial effects. If there is proper counseling before insertion and during early periods of use, tolerance to these and other side effects is increased and discontinuation for menstrual disturbances is reduced substantially. The rest of the management of menstrual problems would be similar to those mentioned under injectable contraceptives.

Other minor side effects that may occur in some cases are slight weight gain, mild hair growth and acne, headache, nervousness or depression. Infection at the site of implant is rare.

Acceptability: From the limited clinical trials it would not be possible to predict the acceptability of implants in the national family planning programme. However, it appears that majority of the users were satisfied and in one study about 80 per cent of them recommended implants to their friends and relatives. Two year continuation rates varied from 38 to 75 per cent.

Some may find removal painful. Visibility of implants under the skin may be disturbing to some and therefore, insertion of the implant in the inner side of upper arm may be preferable.

Problem of Transfer of Technology from the Clinic to the Field

Transfer of contraceptive technology particularly injectables and implants, which have been developed and tested in a controlled environment of the clinics to open society in the field is a complex process. Because, in a field situation many

other factors, which did not exist in clinic environment, become crucial in the acceptance and continued use of contraceptives. To be successful, it would be important to make the technology suitable or adaptable to the culture of the people and capabilities of the service system. At the same time, the people in the community have to be properly educated to make them receptive, and the service system should be appropriately strengthened. Problems associated with the use of injectables and implants assume special significance in a field situation. It would be absolutely essential to develop appropriate methodology and guidelines for introduction of injectable or implant contraceptives in the field undertaking operational studies by a competent multi-disciplinary group. This group should include clinical expert, social scientist, operation research specialist, trainer and educator, programme officer and administrator. Initially, such study may be undertaken in a limited area, and with gaining of experience it can be extended to other areas in an incremental fashion. To avoid losing precious time, it would be important to initiate such operational studies concurrently or overlappingly with clinic-based trials. While designing operational study, factors which affect the acceptability and continuation rate of contraceptives as enumerated earlier must be taken into consideration. In fact, for successful programme introduction of any new contraceptive and even for promotion of existing methods, similar approach should be followed. A detailed design of such operational studies has been drawn up by a multi-disciplinary team of investigators at the National Institute of Health and Family Welfare, New Delhi.

Steps for Introducing Injectables and Implants in the Field - Operational Aspects

Approach and administrative arrangements- Introduction of injectable and implant contraceptives in a mass programme requires high technical skills, proper follow-up, logistics of procurement, storage and supplies and proper coordination among health personnel and various agencies/organisations. Strategically, it would be important to initiate the programme in collaboration with some District hospitals having active postpartum programme (PPP). A trained gynaecologist is incharge of the PPP in district hospitals. An Urban Family Welfare Centre along with medical officer and other staff is attached to this PPP centre. In addition, some Primary Health Centres (PHCs) are also under direct supervision and control of this

Centre. Important strategy would be to initiate the programme in the urban area with the assistance of the Urban Family Welfare Centre. After gaining experience with the delivery of injectable/implant contraceptives, the programme may be extended to the PHC under the control of the PPP Centre. Subsequently, the programme may be extended to other district hospitals with post-partum programme in an incremental fashion. The whole programme is to be organised with an operational study approach.

After the selection of the district hospital the State and District Health Authorities are to be contacted and appraised about the proposed operational study which would be followed by introduction of injectable/implant contraceptives in mass programme. The objectives of the study and the collaboration and assistance needed are to be explained. The details of plan of action are also to be discussed.

Preparation of the community - The community leaders are to be identified and contacted. The purpose or the objective of this programme and the advantages of the injectable/implant contraceptive programme are to be explained and their cooperation solicited.

A short diagnostic survey may be undertaken to find out the socio-economic status, cultural values, perceptions and practices in regard to reproductive health care, the nature and type of contraceptive need, acceptability and credibility of the service agency etc. Probable target couple groups may also be identified.

Based on the available information appropriate information, education and communication (IEC) programme should be planned. The type of the message to be communicated to the individuals and community has to be determined. The IEC programme, which has to be sustained, should be initiated prior to introduction of injectable/implant contraceptives and vigorously pursued during the programme implementation. Special educational and motivational campaigns are to be launched. For such mass programme promotional strategy would be most vital to maximise acceptance. Proper educational material and aids are to be developed for mass communication as well as for group and interpersonal communication.

Doubts and misconceptions regarding menstruation, contra-

ceptives etc. should be removed and favourable attitudes created. Transfer of value system should be done gradually and tactfully. Support of the private practitioners, other health functionaries and voluntary agencies is also to be ensured.

Preparation of service agency- The objectives of the operational study and the plan of action are to be laid down. Background materials including manuals are to be prepared for the education and training of the doctors and paramedical staff. These should include the details of the delivery system, operational directives, product information, educational aids in the form of films, slides, flip charts, talking points etc.; check lists for individual screening of clients by paramedical staff; guidelines for management such as follow-up schedules, list of possible complications and their managements etc. Arrangements for proper record keeping and reporting are to be made.

Logistics of procurement and supply should ensure continued regular supply of injectables/implants, disposable syringes, needles, other appropriate instruments, sterilisation facilities, pregnancy test kits etc. Mobility of the staff for proper follow-up would be very important.

The PPP Centre should have proper facilities for medical termination of pregnancy (MTP).

Orientation and training of doctors and paramedical staff- This training course is to strengthen the knowledge and skill of the doctors for the common gynecological disorders, proper education, motivation and selection of clients, technical aspects of injectable/implant contraceptives including management of complications. They should be trained properly for organising, implementing and evaluating field trials in their respective areas. Stress should be laid on the need of their realising the importance of various factors which influence contraceptive acceptance and practice. Developing a proper attitude and faith in injectable/implant contraceptives would be very important. It should also be impressed upon them that psychological preparation of the couple, and specially of the woman, would be vital.

Since the paramedical staff has to provide an important supportive role, their training is of paramount importance for the sustenance of the programme. They would be involved in

education, motivation and preliminary screening of the clients, and follow-up services including provision of psychological support. The aim of their training would be to provide appropriate knowledge and develop proper skill and attitude.

Screening and follow-up of clients by paramedical staff: The initial screening of the prospective clients and provisional selection will be done by paramedical staff with the help of a check list. Final selection would be done by the gynaecologist/trained medical officer. Injection or insertion of the contraceptive will be provided and follow-up/re-visit schedules are to be explained. During the follow-up carried out by the paramedical staff, if there is any problem the clients are to be reassured and the matter is to be brought to the notice of the doctors. Appropriate corrective measures would be taken. The process continues.

Monitoring and control of the programme: For regular monitoring and control of the programme there should be proper record keeping and reporting system. The coordinator should regularly visit the participating hospitals and centres for getting a feedback, as well as for providing technical guidance and support wherever needed.

Assessment of the programme: The programme will be assessed periodically, and if there are any problems corrective measures are to be taken. There should be an in-built mechanism for evaluation of the process as well as the impact and for proper feedback enabling gradual improvement of the programme.

Extension of the programme to the rural areas: Once the programme in the urban area is stabilised and with the availability of the experience the programme will be extended to the primary health centres (PHCs) attached to the PPP centres. Subsequently, with gaining of further experience the programme will be extended to other districts and PHCs to make it a mass programme.

CONCLUSION

For achieving the goal of population stabilisation there is a great need for accelerating acceptance and practice of spacing methods. Hormonal contraceptives including injectables and implants can play an important role in spacing child birth as well as in restraining population growth. For successful

introduction of new contraceptives as well as for promotion of the currently available methods, systematic planning, preparation, organisation and management are essential. In this process, various factors which influence the acceptance and continued use of contraceptives are to be taken into consideration. Adequate preparation for the transfer of technology from the clinic to the field is to be ensured.

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परिवार नियोजन कार्यक्रम के लिए विभिन्न प्रकार की उत्क्रमणीय-अन्तराल-विधियां (रिवर्सीबल स्पेसिंग मैथड्स) की आवश्यकता हैं। गर्भनिरोधकों की स्वीकार्यता तथा सातत्य-दर (कान्टीन्यूएशन रेट) विविध पक्षों से प्रभावित होता है, जैसे विधि के आन्तरिक गुण, व्यक्तिगत एवं सामाजिक स्वीकार्यता, प्रदाताओं का ज्ञान, कुशलता तथा व्यवहार, प्रभावी संचार, उचित वितरण प्रणाली तथा लागत। कार्यक्रम को क्रियान्वित कराने तथा इसकी तैयारी करने हेतु क्लिनिक-आधृत प्रयोगों से प्राप्त अनुभवों से पर्याप्त मार्गदर्शन प्राप्त नहीं हो पाता। अन्तःक्षेपकों तथा निरोपकों के मामले में यह विशेष रूप से सही है किसी भी जन-कार्यक्रम में नये गर्भनिरोधकों का सूत्रपात करने से पूर्व, कार्यक्रम प्रचालन संबंधी दिशानिर्देशों का विकास करने की दृष्टि से उपयुक्त योजना बनाना, पर्याप्त तैयारी करना तथा संक्रिया अनुसंधान के अनुरूप क्षेत्राभ्यास करना बहुत महत्वपूर्ण है। इन कार्यों में देरी न होने पाये, अतः आवश्यक है कि क्लिनिक-अध्ययनों के साथ-साथ इस प्रकार के संक्रिया-अनुसंधान अध्ययनों का संचालन किया जाये। इस लेख में बताये गये सिद्धान्त एवं अभिगम, वर्तमान में उपलब्ध गर्भनिरोधकों को लोगों में अधिक स्वीकार्य बनाने तथा इनके निरन्तर प्रयोग को बढ़ावा देने के लिए भी लागू होते हैं।

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COMPUTER APPLICATION IN HOSPITAL - MATERIALS MANAGEMENT

T.R. Anand

ABSTRACT

Changes in the organisation and functions of the hospitals have necessitated availability of complex information for day-to-day management of the hospital. In almost all the areas of hospital operations, the role of information is assuming critical importance. In the area of management of materials, because of the volume of information needed, computers can aid the management to provide relevant information at fast speed. The use of computer-based information system in this important area of the hospital has been discussed in this paper.

Complexity of the Hospital

The hospital of today is a complex institution humming with a large number of activities directed towards the ultimate goal of patient-care. The personnel working in the hospital are extremely heterogenous in their education and training, social status as well as social background; as these comprise of top specialists, officers of intermediate level, a large number of nursing personnel and a considerably large variety of para-professionals, housekeeping and sanitation staff. The hospital is a labour intensive institution as it employs more than twice the number of persons as the number of beds in the hospital. Such an organisation performing the crucial role of looking after the sick and wounded needs a very high degree of proficiency in management.

Changing Clientele

The hospital clientele is changing rapidly today the users of the hospital belong to the middle and upper classes of society, are educated and aware of their social rights and is fairly health conscious. The clients demand from the hospital more services, better services, prompt services and most

of all service with a SMILE. The pressures generated by such a client group make the hospital management more complex.

Increasing Utilisation

The utilisation of hospital facilities is increasing far in excess of the increase in population. In spite of the fact that there has been more than three-fold increase in the availability of hospital beds during the last 30 years, the available facilities are far short of the needs of the population. This results in over-use of hospital facilities. This phenomena is more acute in large well-developed and teaching hospitals. In a hospital, the management has not only to deal with the patients but also with the visitors and attendants. They also need and demand attention. This further adds to the problems of hospital management.

Changing Role of the Hospital

The modern hospital in addition to the classical functions of care of the sick is broadening its scope of activities into promotive, preventive and rehabilitative areas. To meet this challenge of care of the community as contrasted with the cure of the sick constitutes another challenge to hospital administration.

Rising Costs

The costs of hospital services have rocketed sky-high during the last couple of decades. The per bed cost of construction of a modern hospital is not less than Rs.100,000 and per bed cost of maintenance per day is not less than Rs.100. In view of the high costs involved in hospital operations, there is need for a very effective and efficient system of financial management.

Trade Unionism

Another development that has overtaken the hospitals is the organisation of hospital workers into a large number of unions, associations etc. This poses additional problems of the management of trade unions in a hospital set-up. The need for modern and progressive man-management in the hospital is really very great.

Backbone of Management

Management is as important as information. Quick and scientific decision-making is directly dependent upon reliable, valid and relevant information available at a speed that is necessary to manage such a complex organisation. Medical data management, therefore, is the most critical problem of the day.

Information Flow

The day-to-day operation of a modern hospital involves the handling of vast quantities of information. Multiplicity of hospital functioning leads to an information flow which is highly variable in content, format and importance. Direct patient management data like laboratory reports, information on drugs order, results of radiological investigations, cardiac monitoring data etc. is of importance in day-to-day management of the clinical aspects of patient-care. Concurrently, indirect information on bed position, linen supplies, diet planning, materials planning and the status of delivery of a multitude of services to different patient-care units is also needed regularly for management purposes.

To keep up with this explosion of information hospitals have to turn increasingly to the use of computer-based methods of information storage, handling, processing and retrieval.

During the last few years computer technology has developed to such a significant level that at present no one need enquire as to what computers can do. The point to be considered is how the computer can be utilised in a hospital set-up to evolve a system wherein information can be stored, retrieved routed, monitored, sorted and verified' with speed and accuracy. This has become an inescapable necessity in the modern hospital. With the help of computers, systems can be designed to provide patient medical histories, current medical records, statistical summaries and other records. Such a system can schedule services, maintain inventory control of supplies and monitor the pattern of uses of hospital beds.

A modern hospital, perhaps, more than any other social institution is dependent on rapid and accurate information flow because in the practice of modern medicine, correct information at the right time is vital to save a life or prevent

a disaster. It is needless to say that in the long run a computer application in the hospital setting would reduce cost of care of patients per day as well as improve patient management. However, like all other newer innovations, the initial costs are bound to be high and decisions will have to be taken relating the minimum size of the hospital which would justify the use of computers. The experience in other countries have shown that hospitals over 200 beds have sufficient information to justify the use of EDP. The costs in other countries range between \$10 - 2 per bed per day depending upon the size and the complexity of the hospital, the type of equipment used and the mode of its usage-.

Potential Areas of Computer Application

The basic data that would need to be collected and stored in a hospital EDP system is as follows:

1. Accounting files
2. Inventory files
3. Pending Account files
4. Drug Index
5. Medical Records of Patients
6. Out Patient Records
7. Doctors Orders
8. Bed Availability
9. Waiting list for Admission
10. Laboratory Result Files
11. Blood Donor Registry
12. Personnel Files
13. Poison Index etc.

This basic information can then be manipulated for the following purposes in a hospital set-up:

- A. *Business Office - Billing and Accounting Functions*
 - a. Hospital Billing
 - b. Admission and discharge control information
 - c. Cost accounting functions
 - d. Payroll function
 - e. Information on open accounts

- f. Purchase functions - both emergency purchases and routine purchases
- g. Accounts payable accounting functions
- h. Outpatient accounting functions
- i. Income and expense accounts.

B. *Areas Related with Laboratory Services*

- a. ECG - collection, analysis and reporting of results.
- b. Laboratory analysis functions.
- c. Laboratory reporting functions *i.e.*, produces reports from report collector, systemwise at the nursing stations, posts entries in patient records, billing and accounting files etc.

C. *Patient Registry and Indexing Activities*

- a. Registry functions - maintenance of separate registry of patients by medical subjects, diagnosis, treatment and results.
- b. Blood donor registry.
- c. Poison index - poison control system, lists poisons by brand names, chemical names with toxic effects and antidotes.
- d. Departmental d. activity review - provides information on the work done departmentwise at defined periodic intervals.
- e. Drug index - provides all information on the therapeutic aspects of drugs.

D. *Administrative Control of Patient Care Functions*

- a. Patient transfer
- b. Service scheduling
- c. Nursing scheduling

- d. Maintenance work scheduling
- e. Dietary functions - menu planning, production planning, information on food usage, food cost etc.
- f. Inventory control functions - control of consumable and non-consumable materials for patient-care including cost accounting of materials and property control.
- g. Census functions
- h. Bed availability function

E. *Patient Care Records*

- a. Nurses notes
- b. Pre-admission data
- c. Physicians orders functions
- d. Medical records maintenance
- e. Out-patient result reporting.

Not included in the above list are wide vistas of application of computer systems in education and training of health workers, research in bio-social areas of medicine and operation research.

Use of Computers in Materials Management (Medical Stores)

Objectives - Maximise Availability
Financial and Manpower Constraints

All activities of -

Planning
Procurement
Storage

USE

Is the Scope of Materials Management

Materials Management As A System

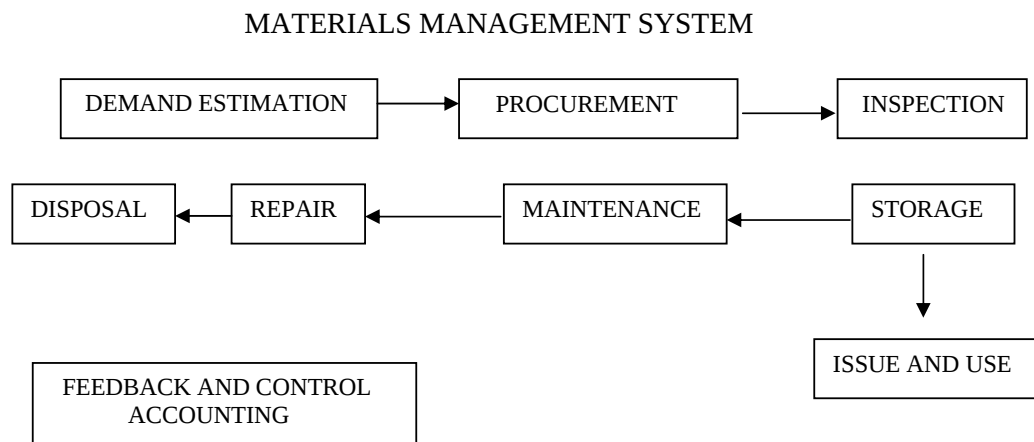
Well defined objectives

Components

Specificity of functions

Inter-dependence of functions

Information and control mechanism



Demand Estimation

Accuracy of Demand

Classification

Coding

Hospital Formulary Drug Information

System Specifications Standardisation

Variety Reduction Substitute Information

Value Analysis

Medical Stores

Surgical Stores

Linen Stores

Diet Stores

General Stores

Stationery Stores

Procurement Process and Inspection

List of Suppliers

Rates of Items

Economic Order Quantities

- Re-order Levels
- Buffer Stock Quantities
- Availability Tolerance
- Monitor Orders
- Monitor Receipts (Rejections)
- Monitor Invoices
- Monitor Payments

Storage

Inventory Accounting		
Rates of Consumption	-	Itemwise-Unitwise
Fast Moving Items	-	Identification and Control
Slow Moving Items	-	Identification and Control
Non Moving Items	-	Identification and Control
Deterioration Rates	-	Minimising
Cost Data Generation	-	
Patient Billing Data	-	

Maintenance

- Maintenance Scheduling and Monitoring
- Status Reporting

Repair

- Demand Listing
- Repair Review
- Repair Status
- Data Analysis and Performance Reporting

Disposal

- Inventory Disposable Items
- Update - Disposals and Inventories
- Decisions for Replacements

Information, Feedback and Control

Demands	-	Information Collection,
Procurement Status		Analysis and Administrative
Inspection Reports		Decisions
Inventories		
Repair		
Maintenance		
Disposals		

Miscellaneous

ABC
VED
SDE

ANALYSIS

-

Cost Controls

Purchase Cost
Carrying Cost
Shortage Costs

Cost Data - Accounting - Analysis - Waste Reduction
Performance Budgeting
Rationalise Charges

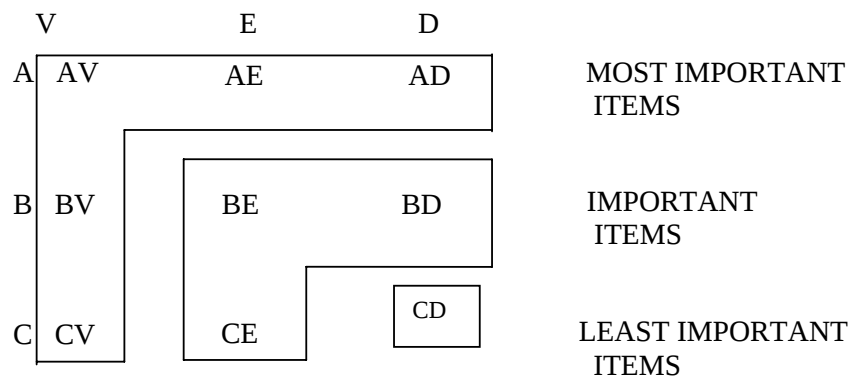
ABC - VED Analysis

ABC

I

Number of Items	Percentage	Total Expenditure	Percentage
47	9	10.03	67
87	19	3.3	22
370	72	1.7	11
504	100%	15.3	100%

ABC and VED



Future Trends in EDP Systems

1. Survey of literature from the advanced countries indicates that in future large centralised regional multi-hospital system would become very popular because of the comprehensiveness of information that can be made available by such a system and relatively low cost because of costs sharing. In such a system new hospitals would be linked with the large computer centres through telephone lines, microwave links etc.

2. There will be major developments towards the use of micro-computers in activities like intensive care of the patients and multi-tests laboratories. The terminal devices providing a link between the computer system and the user is under-going rapid changes. Devices capable communicating with the main system in natural language with minimum of technical skills required are in the offing. The complex tasks of coding, manipulation of large number of controlled devices and even extensive typewriting will be gradually replaced by graphic and optical sub-systems.

Conclusions

The approach to the introduction of computer system in a hospital should be made very cautiously. The level of saturation of the manual system of courses is the main impetus to the introduction of computer in the hospitals. It is of paramount importance that a group of dedicated medical and para-medical personnel exist within the hospital to plan and support such systems. The costs of a well developed system need careful consideration. It would be unrealistic to expect that computer based hospital information system would pay for itself within a few years.

Doctors are strongly individualistic personalities. Very often they are reluctant to accept rapid or drastic changes in their professional environments. While the manufacturers of computer systems would like rapid introduction of computers in the hospitals, great care and prolonged discussions are required between the suppliers and the users before the venture is embarked upon. Today hospital information system has moved from being a luxury to a necessity in the modern progressive large hospital. The state is perhaps set for bringing such innovations in hospitals.

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अस्पतालों के संगठनात्मक ढांचे तथा कार्यकलापों में हो रहे परिवर्तनों के कारण अस्पताल के दैनिक प्रबन्ध के लिए विभिन्न प्रकार की सूचनाओं का उपलब्ध होना अनिवार्य हो गया है। अस्पताल संचालन के लगभग सभी क्षेत्रों में सूचनाओं का महत्व निरन्तर बढ़ता जा रहा है। उपादान प्रबन्ध के क्षेत्र में, अपेक्षित सूचनाओं की विपुल मात्रा की दृष्टि से, संबंधित सूचनायें शीघ्र प्राप्त करने के लिए कम्प्यूटर प्रबन्धकीय-व्यवस्था के लिए काफी सहायक सिद्ध हो सकते हैं। इस लेख के माध्यम से अस्पतालों के इस महत्वपूर्ण क्षेत्र में कम्प्यूटर-आधारित-सूचना-प्रणाली के प्रयोग पर प्रकाश डाला गया है।

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A GENERALISED PROBABILITY DISTRIBUTION FOR CLOSED BIRTH INTERVAL

R. N. Mishra, A. Pandey and K. K. Singh

ABSTRACT

This paper presents a probability distribution for describing the variation in the length of the interval between i th and $(i+1)$ th birth ($i \geq 0$) to the women with specified marriage duration which also accounts for the intervening foetal wastages. The suggested model, for illustration has been applied to an observed set of data taken from Varanasi Survey 1969-70.

In modern times, the analysis of birth intervals has gained considerable importance as they are used to ascertain current changes in natality patterns of women who are in reproductive ages. A number of probability models for analysing closed birth intervals have been proposed by D'Souza, Sheps, Sheps and Perrin, Srinivasan, Chakrabarty, etc. However, these models implicitly assume the continuance of observation for sufficiently large time and are thus applicable to the situations, where the women under study are of longer marital duration. As a matter of fact, the women of shorter marital duration are excluded from the analysis which is not always feasible as at the time of survey the marital of a majority of women is not so large. Sheps *et al*, while discussing the truncation bias in closed and open birth interval data have proposed a theoretical continuous time probability distribution for closed birth interval of the specific order and marital duration on the basis of some results of renewal theory. As such this model can be utilised for any length of marital duration provided some specific forms of the distribution functions of various components of birth intervals are known. Singh *et al*, have recently derived an explicit model for the same by assigning some appropriate forms to different components of birth interval and applied to real data. However, they have assumed that all conceptions result into a live birth. Empirically, it has been investigated that significant proportion of conceptions *between two consecutive live births* results in

foetal wastage which has significant effect on the estimate of the conception rate.

Therefore, it has been derived a probability model for the i th order closed birth interval for a fixed marital duration, taking into account both types of conceptions, namely complete and incomplete (a conception is said to be complete if it results into live birth, otherwise it is termed as incomplete) .

The Model

Following assumptions are made to derive the model for i^{th} ($i = 0, 1, 2, \dots$) order closed birth interval of a woman.

- i. The time interval of first conception after marriage follows an exponential distribution with probability density function (p.d.f.).

$$f_0(t) = \lambda e^{-\lambda t}, \quad t \geq 0, \quad \lambda > 0 \quad (2.1)$$

- ii. Every conception involves a period of temporary sterility called the rest period comprising the duration of pregnancy and post-partum amenorrhoea (P.P.A.). Let h^* and h be the rest period associated with incomplete and complete conceptions respectively.

- iii. The duration between j^{th} and $(j+1)^{\text{th}}$ conceptions ($j = 1, 2, \dots$) follows a displaced exponential distribution with p.d.f.

$$f_j(t) = \lambda e^{-\lambda(t-h_1)}, \quad t > h_1 \quad (2.2)$$

$$\text{or } f_j(t) = \lambda e^{-\lambda(t-h_2)}, \quad t > h_2 \quad (2.3)$$

depending on whether j^{th} conception is incomplete or complete. The parameter λ is called the conception rate, which has been assumed to be constant from conception to conception.

- iv. Let θ be the probability that a conception results in a live birth, $(1 - \theta)$ otherwise.
- v. The waiting times for conceptions are mutually independent.

Let $X_i(T)$, $i = 0, 1, 2, \dots$ denote the random length of the interval between the i^{th} and $(i+1)^{\text{th}}$ live birth where the marriage date is taken to be the time of zero-th birth to a woman with marriage duration T and at least $(i+1)$ births at T . Let $X^\wedge$ denote the random length of the same when the marriage duration is sufficiently large for all women under study. Then, in real situations $X^\wedge(T)$ cannot be said to be the representative of $X^\wedge$. Indeed, $X^\wedge(T)$ generates the censored sample of X_i . The value of $X^\wedge$ at which censoring occurs depends on T and parity. Let $k_i(x/T)$ be the probability density function (p.d.f.) of the random variable $X^\wedge(T)$ then under the above assumptions it can be seen that

$$k_0(x/T) = \frac{1}{G_0(T)} \sum_{r=0}^{\left[\frac{x-g}{h_1} \right]} \theta(1-\theta)^r \lambda^{r+1} \frac{(x-g-rh_1)^r}{r!} e^{-(x-g-rh_1)},$$

$$g < x < T \quad (2.4)$$

Where

$$G_0(T) = \sum_{r=0}^{\left[\frac{T-g}{h_1} \right]} \theta(1-\theta)^r \left\{ 1 - e^{-\lambda(T-g-rh_1)} \sum_{s=0}^r \frac{\lambda^s (T-g-rh_1)^s}{s!} \right\} \quad (2.5)$$

and

$$k_i(x/T) = \frac{G_{i-1}(T-x)}{G_i(T)} \sum_{r=0}^{\left[\frac{x-h_2}{h_1} \right]} \theta(1-\theta)^r \lambda^{r+1} \frac{(x-g-rh_1-h_2)^r}{r!} e^{-\lambda(x-rh_1-h_2)}$$

$$(i \geq 1) \quad h_2 < x < T - g - (i-1)h_2 \quad (2.6)$$

Where

$$G_i(T) = \sum_{j=0}^{L_i} \binom{i+j}{j} \theta^{i+1} (1-\theta)^j \left\{ 1 - e^{-\lambda(T-g-jh_1-ih_2)} \sum_{s=0}^{i+j} \frac{\lambda^s (T-g-jh_1-ih_2)^s}{s!} \right\}$$

$$L_i = \frac{T-g-ih_2}{h_1} \quad (2.7)$$

Here g denotes the gestation period associated with $(i+1)$ th conception and $\underline{x-g}$ stands for the greatest integer not exceeding $\underline{x-g}$

Application

The suggested probability distribution can be used for analysing the data on any order closed birth interval for the females having specified marriage duration. For illustration, the model has been applied to an observe set of data taken from Demographic Survey of Varanasi (Rural) 1969-70 presented in Singh *et al.* & The data represents the distribution of the interval between first and second birth based on the fertility performance of first seven years for the females with marriage duration 7-9 years. The distribution is also based on the consideration of having at least two births on or before first seven years of married life. So it is reasonable to think that the females who are frequently giving births with almost same conception rate (λ) are considered. Further, it has been observed in the above survey that the incidence of secondary sterility prior to the age 30 years and contraceptive practices among them are almost negligible. The observed distribution of the interval between first and second birth for such 184 women is given in Table 1. The probability

TABLE 1

OBSERVED AND EXPECTED DISTRIBUTION OF FEMALES ACCORDING TO TIME FROM FIRST BIRTH TO THE SECOND BIRTH, VARANASI SURVEY, 1969-70

Interval in years	Observed frequencies	Expected frequencies $X=0.653, \theta=0.9$	Expected frequencies for different assumed 9-and values of corresponding estimates of			
			$\theta=0.80, \lambda=0.758$	$\theta=0.70, \lambda=0.902$	$\theta=0.60, \lambda=1.114$	$\theta=0.50, \lambda=1.458$
1.0-1.5	25	28.52	28.84	29.23	29.62	30.36
1.5-2.0	40	35.60	35.69	35.81	35.92	36.40
2.0-2.5	37	38.29	37.97	37.53	36.86	35.89
2.5-3.0	21	27.67	27.46	27.22	26.95	26.60
3.0-3.5	25	19.77	19.70	19.61	19.55	19.37
3.5-4.0	17	13.82	13.82	13.82	13.88	13.92
4.0 & above	19	20.33	20.52	20.78	21.22	21.46
Total	184	184.00	184.00	184.00	184.00	184.00
Values of Chi-square - Degrees of freedom		4.78 4	4.85 4	4.90 4	4.95 4	5.12 4

density function of first order closed birth interval i.e. of $X^{\wedge}(T)$ can easily be obtained from equation (2.6) by taking $i=1$ Once the form of the density function of the random variable $X^{\pm}(T)$ is known, the expressions for mean and variance of the random variable can easily be obtained as follows:

$$E_1(X) = \int_{h_2}^{t-g} x k(x/T) dx$$

$$= A_1 - B_1 - C_1 - D_1$$

$$\text{and } E_1(X^2) = \int_{h_2}^{t-g} x^2 k(x/T) dx$$

$$= A_2 - B_2 - C_2 - D_2$$

where

$$A_1 = \sum_{j=0}^{L_1} \sum_{r=0}^{L_1-j} \theta^{2(1-\theta)^{r+j}} \left[(rh_1+h_2) + \frac{(r+1)}{\lambda} - T' e^{-\lambda(T'-rh_1-h_2)} \right]$$

$$\sum_{m=0}^r \frac{\{\lambda(T'-rh_1-h_2)\}^m}{m!} - \frac{1}{\lambda} e^{-\lambda(T'-rh_1-h_2)} \sum_{m=0}^r \sum_{l=0}^m \frac{\{\lambda(T'-rh_1-h_2)\}^l}{l!} \Bigg],$$

$$B_1 = \sum_{j=0}^{L_1} \theta^{2(1-\theta)^j} \lambda e^{-\lambda(T'-h_2)} \frac{(T'^2-h_2^2)}{2},$$

$$C_1 = \sum_{j=0}^{L_1} \theta^{2(1-\theta)^j} e^{-\lambda(T'-h_2)} \sum_{s=1}^j \left[\frac{h_2 \{\lambda(T'-h_2)\}^{s+1}}{(s+1)!} + \frac{\{\lambda(T'-h_2)\}^{s+2}}{\lambda (s+2)!} \right],$$

$$D_1 = \sum_{j=0}^{L_1} \sum_{r=1}^{L_1-j} \theta^{2(1-\theta)^{r+j}} e^{-\lambda(T'-rh_1-h_2)} \sum_{s=1}^j \left[\frac{T' \{\lambda(T'-rh_1-h_2)\}^{r+s+1}}{(r+s+1)!} - \frac{(s+1) \{\lambda(T'-rh_1-h_2)\}^{r+s+2}}{\lambda (r+s+2)!} \right],$$

$$\begin{aligned}
A_2 = & \sum_{j=0}^{L_1} \sum_{r=0}^{L_1-j} \theta^2 (1-\theta)^{r+j} \left[(rh_1+h_2)^2 + \frac{2(r+1)(rh_1+h_2)}{\lambda} + \frac{(r+1)(r+2)}{\lambda^2} \right. \\
& - T'^2 e^{-\lambda(T'-rh_1-h_2)} \sum_{m=0}^r \frac{\{\lambda(T'-rh_1-h_2)\}^m}{m!} \\
& - \frac{2T'}{\lambda} e^{-\lambda(T'-rh_1-h_2)} \sum_{m=0}^r \sum_{l=0}^m \frac{\{\lambda(T'-rh_1-h_2)\}^l}{l!} \\
& \left. - \frac{2}{\lambda^2} e^{-\lambda(T'-rh_1-h_2)} \sum_{m=0}^r \sum_{l=0}^m \sum_{n=0}^l \frac{\{\lambda(T'-rh_1-h_2)\}^n}{n!} \right],
\end{aligned}$$

$$B_2 = \sum_{j=0}^{L_1} \theta^2 (1-\theta)^j \lambda e^{-\lambda(T'-h_2)} \frac{(T'^3 - h_2^3)}{3},$$

$$\begin{aligned}
C_2 = & \sum_{j=0}^{L_1} \theta^2 (1-\theta)^j e^{-\lambda(T'-h_2)} \sum_{s=0}^j \left[\frac{h_2^2 \{\lambda(T'-h_2)\}^{s+1}}{(s+1)!} + \frac{2h_2 \{\lambda(T'-h_2)\}^{s+2}}{\lambda (s+2)!} \right. \\
& \left. + \frac{2 \{\lambda(T'-h_2)\}^{s+3}}{\lambda^2 (s+3)!} \right],
\end{aligned}$$

$$\begin{aligned}
D_2 = & \sum_{j=0}^{L_1} \sum_{r=1}^{L_1-j} \theta^2 (1-\theta)^{r+j} e^{-\lambda(T'-rh_1-h_2)} \sum_{s=1}^j \left[\frac{T'^2 \{\lambda(T'-rh_1-h_2)\}^{r+s+1}}{(r+s+1)!} \right. \\
& \left. - \frac{2T' (s+1) \{\lambda(T'-rh_1-h_2)\}^{r+s+2}}{\lambda (r+s+2)!} + \frac{(s+1)(s+2) \{\lambda(T'-rh_1-h_2)\}^{r+s+3}}{\lambda^2 (r+s+3)!} \right]
\end{aligned}$$

$$\text{where } T' = T - g - jh_1 \text{ and } L_1 = \left\lceil \frac{T-g-h_2}{h_1} \right\rceil$$

Hence, the variance of $X^\wedge$ denoted by $V(X)$ would be

$$V(X) = E_1(X^2) - [E_1X]^2$$

It is to be pointed out that in the simplified model the non-susceptibility period h_2 associated with the complete conception is constant for all women. In practical situations it is observed that the gestation period for complete conceptions is almost constant as 9 months but the duration of post-partum amenorrhoea (PPA) following a live birth varies from female to female. Hence, it is reasonable to take ' h_2 ' as variable. For Varanasi Survey, an interesting feature of the distribution of PPA associated with a live birth is bimodal^{10/} where the first and second peaks of the curve are occurring at 3 months and 12 months respectively⁹. Thus, if as a first approximation it is assumed that h_2 takes two values h_2^I and h_2^{II} with respective probabilities ' a ' and $(1-a)$, the aforesaid model has presumably an extension. The extended probability density function of X_i for instance, will be given by

$$k_1^*(x/T) = \frac{ak_1(x/h_2=h_2^I) P(i \geq 2/h_2=h_2^I) + (1-a)k_1(x/h_2=h_2^{II}) P(i \geq 2/h_2=h_2^{II})}{a P(i \geq 2/h_2=h_2^I) + (1-a) P(i \geq 2/h_2=h_2^{II})} \quad \dots (3.1)$$

and consequently the expressions for first two row moments $EJ(X)$ and $BJ(X^2)$ will have the following form

$$E_1^*(X) = \frac{aE_1(X/h_2=h_2^I) P(i \geq 2/h_2=h_2^I) + (1-a) E_1(X/h_2=h_2^{II}) P(i \geq 2/h_2=h_2^{II})}{a P(i \geq 2/h_2=h_2^I) + (1-a) P(i \geq 2/h_2=h_2^{II})} \quad \dots (3.2)$$

and

$$E_1^*(X^2) = \frac{aE_1(X^2/h_2=h_2^I) P(i \geq 2/h_2=h_2^I) + (1-a) E_1(X^2/h_2=h_2^{II}) P(i \geq 2/h_2=h_2^{II})}{a P(i \geq 2/h_2=h_2^I) + (1-a) P(i \geq 2/h_2=h_2^{II})} \quad \dots (3.3)$$

In order to apply the model, we thus take $T=7$ years $h_2^I = 1.00$ year, $h_2^{II} = 1.75$ years and $a = 0.5^{10/}$. Also we take the value of h_1 , the period of non-susceptibility associated with an incomplete conception as 0.5 years. This value of $h^\wedge$ is very close to the estimates obtained in other studies in India and abroad^{5, 11, 12, 13, 14}. Now we see that there are two parameters λ and θ in the model, to be estimated if h_1 , h_2^I , h_2^{II} and a are assumed to be known.

The estimates of λ and θ are obtained by the method of moments wherein the observed mean and variance of the distribution have been equated with theoretical mean and variance of random variable $X_1(T)$. The observed mean and variance of the distribution are 2.558 years and 0.949 years respectively. Since the expressions of mean and variance are not explicit in λ and θ , the iteration procedure has been used to estimate the parameters, λ and θ are obtained as 0.65 and 0.90 respectively. Once the estimates of λ and θ are known the model proposed is completely specified and the expected frequencies given in col. 3 of the table are computed by using equation (3.1). The calculated value of Chi-square is 4.78 which is insignificant at 4 degrees of freedom at 5 per cent level of significance. This shows that the model describes the situation satisfactorily. As such it can be used to estimate conception rate which in turn gives the estimate of fecund-ability, and the estimate of the incidence of foetal wastages among the women on the basis of their first order closed birth interval. A careful study of the observed and expected distributions presented in columns 2 and 3 of the table also clearly demonstrates the preference of the digits in completed years such as 2 and 3. Thus, it is nevertheless to say that the present model provides a graduation formula to detect the errors in the data.

Lastly, when for different assumed values of θ the estimates of λ have been computed, it is observed that as the value of θ decreases estimate of λ increases with almost same amount. However, the values of Chi-square for all above sets of values of λ and θ are insignificant but consistently higher than the value of Chi-square corresponding to moment estimates of λ and θ , and thus they (moment estimates) can be taken as proper estimates. Moreover, these moment estimates of λ are consistent to those obtained by Chakrabarty for the above survey data.

Lkkjk'k

इस लेख में महिलाओं के विवाह की एक निश्चित अवधि के आधार पर जिसमें भ्रूणरक्षण संबंधी अन्तःवर्ती अवधि भी सम्मिलित है, उनके i .th तथा $(i+1)$ th जन्म (≥ 0) के बीच अन्तराल की लम्बाई में भिन्नता को व्याख्यायित करने के उद्देश्य से प्रायिकता बंटन प्रस्तुत किया गया है। दृष्टांत के लिए प्रस्तावित मॉडल का प्रयोग वाराणसी सर्वेक्षण, 1969-70 से लिए गये आकड़ों के एक पर्यवेक्षित सेट में दिखाया गया है।

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**QUALITATIVE ASSESSMENT OF PATIENT CARE RENDERED BY
MEDICAL OFFICERS IN PRIMARY HEALTH CENTRES OF
PONDICHERRY**

K. A. Narayan and R. D. Bansal

ABSTRACT

A qualitative assessment of patient care by medical officers was done in the Primary Health Centres of Pondicherry. The medical officers elicited a history in most patients. Less than 50 per cent had a physical examination done and very few received instructions. On an average 56.9 seconds were spent on a new patient and 53.8 seconds on an old one. Half of this time was lost in patient movement. The overall performance scores assessed for some diseases were low. Measures for improvement are suggested.

One of the greatest challenges for health systems in most developing countries is providing primary health care. The primary health centres form the backbone of the health delivery system. Patients, however, tend to flock to higher level health centres and hospitals by-passing the primary health centres. One of the reasons could be the poor and inadequate quality of services rendered in these PHCs. To substantiate this hypothesis, this study was carried out with these objectives: (1) to examine the type of care provided to the beneficiaries in terms of time spent, activities performed etc. for each patient; (2) to assess quality of care with reference to some common diseases; and (3) to suggest measures for improvement in medical care.

Material and Methods

The study was carried out in six of the seven PHCs in Pondicherry region of Pondicherry State. The seventh had no medical officer in position. Each PHC covers about 15,000 population distributed over 12 to 18 villages. Only 10 of the 13 sanctioned medical officers were in position and 2 were ladies. All except one had had less than two years service

and none had postgraduate qualification. Though accommodation was provided, only one stayed in the PHC premises. All PHCs had road-worthy vehicles. Alternative transport was provided when needed.

By non-participant observation (where the observer remains passive and does not indulge in any activity and only records the activities carried out by the observed person) each medical officer was observed for six working days by a postgraduate student of Community Medicine who remained the only observer during the period of the study.

The medical officers were observed for the time spent on each activity of patient care like history taking, physical examination etc. and a qualitative assessment of care in relation to respiratory infection, diarrhoeas, scabies and fevers.

The data thus collected were transferred to the observation recording sheets. Time spent on each activity was recorded in a continuous manner. Qualitative assessment of care for the four diseases were done by means of a scoring system. The diseases were selected on the basis of feasibility of a scoring system and frequency of the diseases as ascertained from previous morbidity data. The doctors were assessed for proficiency in history taking, physical examination, usage of laboratory facilities and advice on prescription, *e.g.* for a case of diarrhoea the doctor was given one score for duration, frequency, type of stool, associated symptoms in history assessment of dehydrations in physical examination, etc. Each point received one score. The score sheets were developed by three doctors separately in consultation with a specialist in Internal Medicine and then pooled. As certain items were not relevant for all cases, scores were calculated as percentage of the maximum possible score. The maximum score therefore was 100.

Findings

Each medical officer was observed for one week by one observer. The findings therefore may not be typical and cannot be generalised.

Time per patient: Of the total patients seen, 64.4 per cent of patients were 'new' and the remaining were old cases. It was found that the doctors spent on an average 56.9 seconds on new patients and 53.8 seconds on old patients; the difference

not being statistically significant. The time was uniform irrespective of patient load.

Service content : The percentages of new and old patients having history elicited, examination done etc. is given in Table 1. History was elicited in most new patients (94.7 per cent). Less than 50 per cent had a physical examination. All the patients received a prescription. The differences of percentages for individual items for new and old patients were statistically significant. Very few patients (6.6 new, 4.1 old) received instructions. On questioning the doctors revealed that they expected the pharmacist to give necessary instructions,

The average time spent per patient on each item is given in Table 2. It can be seen that of the already meagre time less than 50 per cent is spent on the patient directly. The rest is lost in patient movement.

Qualitative care assessment: The average scores obtained by the doctors for each of the diseases is given in Table 3. The doctors elicited fairly adequate histories. One medical officer (BII scored poorly on all counts. The doctors neglected a physical examination in cases of fever. Though laboratory technicians were provided, their usage was low. Very few patients received proper advice.

TABLE 1
ACTIVITY CONTENT OF PATIENT CARE BY MEDICAL OFFICERS

Item	New Patients	Old Patients	Significance Old : New
Numbers	2,183 (63%)	1,209 (37%)	
History	94.7	69.9	p < .01
Physical examination of at least affected part	50.9	29.4	p < .01
Instruction	6.6	4.1	p < .05
Prescription	100.0	100.0	
Record	36.5	43.4	

Figures indicate percentage having activity performed.

TABLE 2
AVERAGE TIME SPENT PER PATIENT (IN SECONDS) ON COMPONENTS
OF MEDICAL CARE

Item	New Patients	Old Patients
History	7.3	4.9
Physical	5.4	2.4
Instruction	1.3	1.0
Prescription	11.2	10.6
Record	3.8	4.9
Sub-Total	29.0	23.8
Total	56.9	53.8

TABLE 3
OVERALL PERFORMANCE SCORE FOR SELECTED PATIENT CARE
ITEMS OBTAINED BY MEDICAL OFFICERS

P.H.C.	A		B		C		D		E		F
M.O.	1	2	1	2	1	2	1	1	2	1	
Respiratory											
Infection	45	45	23	57	57	57	47	53	50	50	
Diarrhoea	44	33	12	38	22	29	47	44	54	42	
Scabies	83	73	33	58	65	60	75	63	85	83	
Fevers	45	36	10	23	41	42	43	49	36	46	
Average	54.2	46.7	19.5	44	46.2	47	53	51.2	56.2	55.2	

Discussion

In a study in Delhi it was found that Medical Officers spent on an average 117.15 seconds per patient. In the present study, the time spent was 56.9 seconds. 86.4 per cent of new patients had a history elicited and only 29.04 per cent had a physical examination done. In a study conducted in Punjab and Mysore[^] it was found that in Punjab 48 per cent of all patients had a history elicited and 22 per cent had a physical examination. In Mysore the figures were 34 per cent and 19 per cent. In this study more numbers had a history elicited and physical examination done. No studies could be found in the available literature where a scoring system had been used.

Doctors spent very little time on patients and most of what is spent goes into patient movement. Percentages having physical examination done and advice given is low. This would entail increased revisits increasing patient load. Previous studies 2-6 have shown that more than 25 per cent of the time medical officers remain idle. If we assume that in an OPD schedule of four hours, 100 patients attend the clinic, the doctors could spend at least two minutes per patient. This would be double the time spent at present. He could carry out physical examination for all cases thus detecting underlying and undetected diseases. The medical officer could also give advice on prescription and health education. By experience the doctor would know which are the lean and heavy OPD days and regulate the time accordingly which he spends per patient.

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Lkkjk'k

पाण्डीचेरी के प्राथमिक स्वास्थ्य केन्द्रों में चिकित्सा अधिकारियों द्वारा रोगियों की देखभाल संबंधी एक गुणात्मक मूल्यांकन किया गया था। चिकित्सा अधिकारियों द्वारा अधिकांश रोगियों की पूर्वस्थिति के बारे में वृत्तपत्र तैयार किये

गये थे। 50 प्रतिशत से कम रोगियों ने शारीरिक जांच कराई थी तथा बहुत कम रोगियों ने निर्देश प्राप्त किये थे। जांच हेतु एक नये रोगी को औसतन 56.9 सेकेन्ड का समय दिया गया था और एक पुराने रोगी को 53.8 सेकेन्ड का समय दिया गया था। इसमें से आधा समय रोगी का अन्य गतिविधियों में लग गया। कुछ रोगों के बारे में आंकलन किया गया कि जांच निष्पादन बहुत निम्न स्तर का था। प्रस्तुत लेख में सुधार के लिए सुझाव प्रस्तुत किये गये हैं।

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HUMANISATION OF HOSPITALS IN FULFILLING ITS RESPONSIBILITIES TO THE PATIENT

R. C. Anand

ABSTRACT

The lack of understanding about the total human being has frequently led to a one sided approach by the various specialised services. The emotional measuring of illness and medical care has received attention by the various specialities extending service in different fields. The patient as the centre of interest in an organised care of the sick is often bewildered by the complexity of the unfamiliar environment in which he finds himself. A hospital cannot fulfill the function of providing medical treatment without giving due regards to social needs of its patients. In this context there emerges the medical social worker to contribute his/her part in the form of social diagnosis. There is great need to have blending of social diagnosis with clinical diagnosis to achieve the maximum benefit for the patients while they are in the hospitals.

A hospital cannot fulfill its function of providing medical treatment without giving due regard to the social needs of its patients. The range of these needs is very wide and it is by no means always easy to distinguish between the relatively simple welfare needs which can be met without the intervention of a trained social worker and social problems which require professional assessment and skilled help.

The modern hospital is a scientific institution with a high degree of multi-dimensional scientific approaches towards the diagnosis and treatment of the patient. For most of the time a sick person feels at the mercy of others without being able to evaluate the hospital activities and he fails to understand whether his trust in the hospital staff is justified or not. In such a system, humanization of the hospital is essential to counteract the serious threat to the personal integrity of the patients and their psychological health.

Hospitalisation itself is a situation of crisis to many people. There are periods of uncertainty which impose heavier burden on many people than even knowing the worst. Adjustment to a great degree can be achieved in many people with some help to come to terms with the reality situations, during the period of waiting and anticipation with elements of both hope and dread.

Franz Alexander points out that physicians should take into account both psychological and physiological factors in diseases and must form the scientific basis for the fusion of ideas deriving from the knowledge of the interaction of emotions and bodily states.

The multiple factors which may be entering into the cause of the disease, the physiological inter-relationships which constitute the disease and enter in the therapeutic process must be recognised and evaluated. When there is a strong emotional component in illness, the patient may not succeed in regaining a state of well-being until he has made a satisfactory adaptation to his particular life situation.

Each patient reacts to the illness as per his own psychological personality and life experiences. In addition to the wide variations in situations, individuals differ greatly in their ability to handle pressure. The emotionally mature and secure person obviously can carry a greater weight of responsibility and can tolerate more frustration of his personal needs than the person whose psychological development has been arrested or disturbed. The person who, because of unfavourable factors in his psychological growth process, has achieved only a minimum of emotional security and ego strength, has only limited capacity to handle the anxiety resulting from pressures. The individual with a relatively weak ego may find an escape from his anxieties in the less demanding situation that illness provides. The physical symptoms can be given up only if reality is made more satisfying or less threatening, or if his ego can be strengthened to cope with the problems of his day by day living, or, more commonly by both.

Patients Behave Towards the Illness as per Their Family and Cultural Attitudes

Family interaction has been identified as a specific force. A family as well as an individual establishes a balance. For a

satisfactory balance, a synchronization of needs and satisfactions of all family members must be achieved. Such traumatic experiences as death, or serious illness of one member have repercussions on the life of all the family members. Anxiety is heightened and as a result, capacity to handle reality burdens is decreased. Medical and social treatment of illness to be preventive as well as therapeutic, must take into account family dynamics as well as individual dynamics. Not only, must the patient be viewed as a total personality but his needs must be related to the interacting forces in the family. Although, the general pattern of family interaction may be more or less constant, life's events call for continuous adaptations in the pattern of the changing surroundings. With the birth of the first child, both parents must recast their accustomed roles, new responsibilities must be undertaken and certain personal satisfactions withdrawn. If these demands are too great, or if either the mother or father cannot meet the new responsibilities or does not gain sufficient satisfaction from the role of parent, some disturbances is likely to occur. The results often fall into such categories as marital problems, desertion, rejecting parents and behaviour difficulties.

Family and Cultural Attitudes Effect Both Negatively and Positively on the Patients Acceptance of Medical Care

Harriett M. Bartlett², American Medical Social Worker, while describing 'Characteristics of the particular field' stressed the importance of socio-cultural attitudes prevalent in society towards the field, which determines characteristics responses from the people. Because man is a social being, he is influenced by and exercises influence upon the other persons in his immediate sphere. Criticism or lack of sympathy by others close to the patient in his daily life adds to his discomfort and insecurity, while friendly support aids in his recuperative process.

Basic knowledge in the family about the disease process, experiences of the past about the diseases and medical care and the existing cultural attitudes effect on the acceptance of the medical care. The patient needs re-inforcing ego strength and he needs to be encouraged to seek understanding about his condition and consider ways for meeting his difficulties. The way the patient manages his" problems connected with medical care is not only a reflection of his individual pattern of behaviour revealing quantity and quality of his anxiety, his ego strength

and the nature of his various defences, but also the familial and cultural attitudes towards medical care. The emotional ingredients of fever, pain, anxiety, guilt, shame and related feelings which form the variable emotional components in illness, tend to isolate the sick person from place of work, family and social pursuits for varying periods of medical care, and all these days he has to react by the feeding back impulses from these areas, as per the characteristics particularly present in these areas.

Kang, Shin-Pyo in his study 'towards a new understanding of culture of the East Asians, Chinese, Koreans and Japanese' found that the loss of self-identity, an increase in mental disorders and a breakdown of social control were some of the most prominent phenomena among the East Asians in general. Asians had adopted and an increasing number continue to adopt, various approaches to resolving this dissonance. Some try to restore their identity by returning to tradition, others try to interpret their tradition in terms of Western ideology.

Distinct Factors Affecting Patient's Ability and Willingness to Use Medical Facilities

1. *Previous experience with illness-* If the previous experience has been able to give optimal of emotional security and ego strength to the patient in recubance of the disease and in handling the anxiety resulting from reality pressure, he will react favourably for the medical facilities.
2. *Patient's understanding of the feeling about the illness:* Such as how much knowledge he has? How much information has he accepted about his illness? What are the limitations for understanding about the illness - emotional attitudes, blocking, or limited intelligence? The patient should be given clear understanding of the care recommended by the physician. He and his family should participate, whenever possible, in deciding on the choice of resources to be used. As a basis for such reality planning, the patient and his family should also understand the nature of the disease process, infection, degenerative, destructive and which organ will primarily and secondarily be affected.
3. *Anxieties created by his complaints in regard to:* symptoms and pains, diagnosis and its meaning, types of

tests and possible treatment, surgery and its results, possible disfigurement or death, failure of communicability with hospital, possible outcome of hospitalisation in the form of incapacity and disability, all contribute to the anxieties of the patient.

Francis Upham describes that the understanding of the effects of anxiety on the individual's functioning is a prerequisite for the person offering responsible professional help. A sense of anxiety or apprehension is a natural and expected component of any new or difficult life situation, a feeling of anxiety of a vague and of undefined character may be present in some individuals as a result of old, repressed intrapsychic conflicts. At point of stress, the individual not only feels anxious or worried about the real situation but his anxiety often is increased by the re-activations of the old repressed fears and conflicts - he thinks more about dependency, abandonment, mutilation etc.

4. *Attitudes towards hospitalisation'*. The various factors deciding the attitudes of the patient to accept hospitalisation or otherwise are - the public relation or public image of the hospital, the feeling of loss of independence and its meaning to him, his willingness to accept the hospital procedures and policies, his reactions to strange experiences in the new surroundings and the degree of satisfaction he may desire by the feeling of being cared for and having his illness accepted and given attention to by the hospital staff. Complexity in organisation is inevitable in an institution that aims to make available to sick people the skills and constantly growing knowledge of modern scientific medicine. Ida M. Cannon[^] states that the patient as the centre of interest in organised care of the sick is often bewildered by the complexity of the unfamiliar environment in which he finds himself. Yet he seeks the medical institution usually with faith, if not confidence, in the hope that is there for him.

Recently, there has been stress on humanisation of the hospital. In the public health service of the province of Hainut they have established a post Immunisation of the hospital* giving the requirements in three directions; in the patient's reception, in information and in guidance during his stay and after.

Inness and Hospitalisation Generate Problems to Patient and His Family

A patient has a responsibility at home. When comes to the hospital, he bears the loss of wages and the strain on the family finances. He has to dissociate himself from the home-responsibilities for care of others. There is loss of status and separation from the family resulting in loneliness. The financial and economic costs of illness create natural anxiety in people. Chronic illness of long duration, extended hospitalisation or illness of the bread winner many create debts or budgeting deficits for which many families are unable to make adequate provision. The fear of the financial costs of illness sometimes deters the individual who is in need of medical help from seeking the benefits of early diagnosis and treatment. Even in short time illness, one has to pay prompt attention to budget care of children, medical costs, relationship with employer and convalescence costs. Chronic illness causes loss of place in the family whether patient is father, mother or child, it frequently entails a permanent readjustment for each person in the home. On the other hand, the family also has a strain of making frequent hospital visits, which results either in compulsive visiting or neglect by family..

The humanisation should be focussed at all the three main places of the hospitalisation *i.e.* admission, during medical care, and during discharge both regular and against medical advice.

Admission

During admission, a patient may show certain characteristic behaviour as per his own self, family or cultural background. He is to be made to understand the necessity of accepting medical decision and conditions of acceptance. His problems created by the given illness and its hospital treatment, feeling of loss or threat of loss of various kinds including the loss of freedom as a result of hospital admissions, have to be analysed. He should be made able to accept the medical reality.

During Medical Care

Francis Peabody and Richard Cabot were among the early writers who discussed the doctor's role of giving assistance

and guidance to the ill persons. The doctor's job as the expert in the realm of diagnosis and treatment of the illness requires an approach which is definite and authoritative. He is the person who in many respects knows what is best for his patients and it is his duty to convey this to them unequivocally. The patient and his family should participate, whenever possible, in deciding the resources to be used. As a basis for such reality planning, the patient and his family should also understand the nature of the disease process and which organ will primarily and secondarily be affected. He should be told about the possible rehabilitative measures also. Thus a patient should receive preparation for the discomfort, pain and time of immobilisation involved in any given medical procedure. Therefore, during a given medical care, there is a definite role of:

1. Need for interpretation of the diagnostic and therapeutic procedures and the plans of treatment.
2. Need for consideration of the likes and dislikes of the patient concurrently with the therapeutic process.
3. Need for participation with expert medical opinion in planning for patient's own care.
4. Recognition of the desire for confidentiality of data of the patients.
5. Need for intermittent acknowledgement of the progress of the patients.

In brief, a good medical care is dependent on the doctor's continual awareness of his patient's social circumstances and his feeling about these.

Discharge

1. *Regular discharge:* Patients need to be prepared for discharge by making them understand the medical condition, the end result of the medical care and recommendations for follow up care. Patients must have the restored faith or confidence in themselves and show the emotional acceptance of the final diagnosis. His reactions to the diagnosis have to be properly guided and suitably moulded for smooth and adequate follow-up. If he has been left with some disability he should be explained

the plan of action for his physical, mental and social rehabilitation through the concerned agencies in the community.

Similarly, families also need to be prepared for discharge by understanding of patient's medical condition and needs. The emotional and physical strains involved in accepting care of patients, of the family should be anticipated and accordingly the family should be motivated for the care of the patient. The cost of home care if any should be explained to the family. Similarly, if there is any need for care outside the home as outpatient a day-care programme available in the community, the importance of the same should be imposed upon the family members.

Many times, the patient does not want to leave the hospital due to the feeling of insecurity in the family conditions, fear of uncertainty in the absence of the expert medical attention or financial crisis involved in the home care. Each of these elements if existing at the time of discharge, should be examined in detail and proper rehabilitatory measures should be suggested to break the dependency state on hospital, in order to have maximum utilisation of the hospital beds.

2. *Discharge against medical advice:* Carl Binger says that the patient projects his needs upon the doctor and endows him with power and authority to satisfy him. The patient is always ambivalent and feels towards the doctor both love and hate. When the patient is leaving hospital against medical advice, it means that he has not been able to establish the harmony between self and the hospital situation. There may be feeling of insecurity, unacceptance of medical reality or loss of faith in the system. The patient and the family need to be made to realise the implications of against advice discharge.

Hospital authorities also should have the responsibility to understand the reasons why patient leaves against medical advice.

There are medical, social, emotional and economic implications of such discharges to the patient, family, hospital and community as a whole.

Care Following Discharge

Because the patient is discharged, he is not to be forgotten or ignored. He should be followed for a varying length

of time to see that he does not revert to a former method of life. Recent changes in medical organisation and concepts have made it possible for the physician and the therapeutic team to extend their united services into the home. Dr. Cherkasky (1947) has pointed out that the home care is the natural place for the patient to recuperate. But the responsibility to make home care effective is the responsibility of the physician who should give all necessary guidelines.

The patients must understand and must be able to carry out the recommendations following discharge from hospital. They must be able to accept the results of the hospital care and the degree of disability in order to prepare them for the rehabilitation. The hospital must accept the responsibility for continued care of the patient and must understand the problems of patients in continued care.

Lkkjk'k

समग्र मानवता के प्रति व्यापक समझदारी की भावना के अभाव के फलस्वरूप विभिन्न विशिष्ट सेवायें बारंबार एक-पक्षीय दृष्टिकोण धारण करने की ओर प्रवृत्त हुई हैं। विभिन्न क्षेत्रों में सेवारत विशिष्ट संस्थाओं द्वारा बीमारी तथा चिकित्सकीय देखरेख के भावनात्मक आंकलन की ओर ध्यान दिया गया है। एक ऐसे वातावरण में जहां रोगियों की संगठित देखभाल की जाती है, वहां एक केन्द्र बिन्दु के रूप में रोगी, अपरिचित वातावरण की जटिलताओं में अपने आपको बड़े असमंजस की स्थिति में पाता है। रोगियों की आवश्यकताओं को उचित महत्व दिये बिना, एक अस्पताल उसे चिकित्सकीय उपचार प्रदान करने में अपना दायित्व पूरा नहीं कर सकता। इस संदर्भ में सामाजिक निदान के रूप में अपना योगदान देने के लिए चिकित्सकीय समाज—कार्यकर्ता का अस्तित्व सामने आता है। जब रोगी अस्पताल में भर्ती होते हैं तो उन्हें अधिकाधिक स्वास्थ्य लाभ प्रदान करने के उद्देश्य को पूरा करने के लिए औषधालीय—निदान के साथ—साथ सामाजिक—निदान का समावेश होना बहुत आवश्यक है।

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