

Title; Potential of Open and Distance learning in Training of Paramedical Technician ;Case Study of Radiography course at NIOS India.

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Paramedical science is an inseparable part of the health care system and runs parallel to medical science in the diagnosis and treatment of diseases. Diagnostic tools like the clinical laboratory, the X-ray, the ultrasound, CT and other invasive or non-invasive methods and therapeutic technical modes like physiotherapy, occupational therapy and speech therapy are part of the paramedical system.

With the development of medical science and its attendant spurt in complex mechanization of medical equipment, there had been an inadvertent growth in paramedical science and there is an ever increasing demand of trained paramedical manpower in Indian subcontinent also reflected in Prime ministers council on trade and industry(1). This automatically prompted a demand for trained paramedical manpower. Thus paramedical education becomes an important and integral part of medical education and is the backbone of health care delivery system .

SITUATION IN INDIA

India is a huge country with the population of over 100 millions .Health care services is under tremendous pressure In spite of its importance in the health care industry, the potential of paramedical science as an organized form of education is still vastly underestimated. The government did not bother about forming any strategy to promote an independent paramedical education. There is no paramedical council like the Medical Council, the Nursing Council or the Pharmacy Council to govern the particular system of education.

Exploiting this legal loophole, many unscrupulous people opened training centers. In the absence of any governing authority, administrative, regulation of centralized system, such pigmy-sized dubious centers mushroomed all over India. They distributed certificates, not knowledge. They produced qualified paramedics, not educated ones. They made paramedical training a profitable business, not a source of social service.

BARC (Bhabha Atomic Research Center) (2)in a national survey has observed that only 40 % of trained and qualified technical staff is working in hospitals, nursing homes and diagnostic centers .However this figures is about 65 %-70 % in metros and districts Head quarters. With the availability of high tech equipments it is very pertinent to have qualified trained staff.

Imaging services are not exception in this regard. Expansion of imaging services has increased the pressure on services by radiographer /technician. The status of radiography services here can be assessed by the table showing the estimated numbers of individuals served by one radiographer in India and some other countries.

Nation	India	Australia	U.K	USA
No. of persons served by one radiographer	1,14,000	5200	4480	2270

It is quite clear from the figures that in India we need to train and upgrade more and more number of quality radiographers for better imaging services to our huge population.

Need for training the workers

In a developing country like India, where an optimal level of health service is a dream to many, there are far too few health workers in training and the number of training institutions is far too few. In a survey done by Federation of Indian Chambers of Commerce and Industry (FICCI) (3) *on emerging skill shortage in the Indian industry* To understand the gravity of the situation,

- there are about 5,92,215 doctors available in the country in 2005 and the projected demand for 2015 is 1,200,000.,
- No of nurses available in the country in 2005 -929,826. projected demand in 2012 is 1,109,826
- In case of paramedics acute shortage is likely to emerge in case of radiographers , ECG technicians ,O.T Technicians audiometrists

The data presented by the Prime minister's council on trade and industry also show a similar trend

- Doctors required in the country by 2015 are 1,241,000
- X-ray technicians required by 2015 are 12,410 ;where as available number are 4872.
- Lab technicians required by 2015 are 62,050

With a limited number of available training institutions, it is nearly impossible to train large numbers of medical officers and paramedical workers.

Strategies for Training Through Distance Education

Distance education systems have emerged all over the world to meet the growing demand for education, including professional education, to provide opportunities at a comparatively low cost, and meet the continuing education needs of professionals and various other functionaries. The distance education often involves a mix of multi-media approach to design, develop and implement independent learning programs through self-instructional materials, both in print and electronic media forms. The strengths of distance education allows self pace for convenience of learners and also facilitates learners having control over their learning. The various media used for distance education delivery include primarily print materials, audio and video programs, radio and television programs, tutoring and counseling, field visits, laboratory practicals, extended contact programs, and teleconferencing.

Distance education as a potential tool for training of Paramedical technician

Distance education can be considered as one of the most significant innovations in the field of education and is a relatively new concept in India, which not only has the ability to train a large number of workers in a short time in a cost effective way but can also attend to skills without diluting the quality. The target learners can have independent studies where print materials can serve as educational tool and the cost of learning can be low .

The National Knowledge Commission (4) set up by the Prime minister of India in 2005 to recommend and undertake reforms in order to make India a knowledge based economy and society has also strongly recommended the distance education for up gradation of skills ,for continuing education and also for normal teaching learning process.

The National Institute of Open Schooling one of the largest Open Schooling systems in the world at present is offering many courses in the area of Health and Paramedical through distance education. . In 2007 having realized the potential of distance education Indian Medical Association having the strength of 1,78,000 doctors of all over India approached the NIOS for the collaboration and has signed a MOU for the development of two more courses i.e. Diploma in Medical Lab technician and Operation Theater Technician courses ,which will be introduced from the next year,

The course in Diploma in X -ray Technician course on Radiography was introduced in the year 1999 . The course was developed in collaboration with University College of Medical Sciences and GTB hospital Delhi The entry for this course is 12 standard pass with science subjects.. Keeping the quality issue in mind till date only 29 accredited centers are operational all over India with intake of only 10 students per accredited center . The course gained publicity after 4 years of launching of the and majority of the centers became NIOS accredited centers after 2002.

Students registered with NIOS for Radiography course - last 5years

Year	Male	%	Female	%	Total
2002	121	77	30	23	151
2003	148	81.3	34	18.6	182
2004	99	75.5	32	24.4	131
2005	58	59.1	40	40.8	98
2006*	37	50	37	50	74
2007	95	69.8	41	30.1	136
Total	558	72.2	214	27.7	772

*admission was suspended in majority of the institution

The average age group of vocational admissions in NIOS is between 15 to 20 years but for the Radiography course the same trend was not seen here , for x-ray technician course the average age of admission is i.e. between 20 to 25 years .

Age group	No.	%
< 20 years	96	12.4
20-25	384	49.7
>25	292	37.8

Till 2007 out of the total 370 students were certified i.e. about 65 % were certified . (the data for the last two years was not considered as the course duration is for two years..) which is a very good percentage for any programme to be successful.

The successful ness of any vocational programme can be judge by the employment avenues and job opportunity it has for the learners as well as the satisfaction of the employers . Information gathered by the pass outs of the programme through the feed back from the Accredited Vocational Centers(AVI) indicate that the pass outs are getting starting jobs as a Dark room assistant or Junior Radiographer in government , private hospitals and diagnostic clinics etc.

- 57.8 % of the pass outs are in jobs ,
- 3.5 % went in for higher studies
- Information not known for the remaining 38.7 % and out of which 14.2% are girls and have no information whether they are sitting at home or are married and moved out..

- The employers are satisfied with the course content and the trained manpower that they are getting. Moreover looking at the potential of the few institutions and the type of training that they impart the number of seats allotted to them have also been increased. for admission.
- The learners are also satisfied because there is ample job opportunity for them.

Conclusion and future action ;

It is quite obvious from the FICCI survey and the report of the Prime minister's council on trade and industry that the demand for the skill worker in the area of radiography is quite high and ever increasing .As the new and more high tech diagnostic modalities are coming in the field of radiography. New and specific modules have to be added with the advances in the radiography field. and hence Distance Education would be the most appropriate system to do the same.

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