Theatre and emergency services rendered by generalist medical practitioners in district hospitals in the Western Cape

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Abstract

District hospitals play an important role in rendering comprehensive health services to communities. The district hospital is an integral part of the district health system providing not only curative level-one hospital services but also outreach and support to primary health care services. District hospitals are staffed by generalist medical practitioners who are required to perform a wide range of clinical duties and procedures. A situation analysis to identify the range of duties performed by medical practitioners in rendering emergency and theatre services at district hospitals in the Western Cape was conducted in 2001. Data was collected from the casualty register, theatre register, routine monthly hospital report, a medical officer questionnaire and a questionnaire collecting general information about all the district hospitals in the Western Cape province.

The 27 district hospitals were staffed by 147 full time, part-time and community service practitioners at the time of the study. The part-time practitioners had statistically significant more experience. Fifty percent of the respondents had done an ATLS or equivalent course, whilst only 5% were qualified family physicians. Musculo-skeletal problems were the most commonly presenting complaint at casualty departments, followed by lacerations and assaults. Female sterilization was the most frequently performed surgical procedure, and secondly caesarean section. General anaesthesia was the most common anaesthetic method used. The results of the study underlined the importance of district hospital medical officers being competent generalists, able to deal with undifferentiated problems ranging for simple primary health care complaints to multiple trauma. The need to perform procedures such as caesarean section and general anaesthetic in district hospitals has important implications for appropriate training of district hospital medical practitioners. *(SA Fam Pract 2003;45(7):15-19)*

INTRODUCTION

District hospitals play a pivotal role in the District Health System by supporting primary health care services in the district and serving as a gateway to higher levels of care. District hospitals generally have between 30 and 200 beds, a 24-hour emergency service, and an operating theatre, with generalist staff supplying comprehensive level one-hospital services to in-patients and outpatients.[1] The World Health Organisation's functional definition of the hospital at the first referral level includes comprehensive level-one hospital clinical services, support of PHC services, in-service training, intersectoral linking, and community involvement. The district hospital should be more than a curative facility and must be closely linked with all aspects of health care development within its district. [2]

The National Department of Health developed a comprehensive set of norms and standards for district hospitals, listing a broad range of services to be provided.[1] This range of services demands that a district hospital medical officer be equipped with a broad body of knowledge and a wide proficiency of technical skills. The district hospital practitioner needs clinical skills, surgical skills, community health skills, management skills, as well as the ability to train other health workers and ensure quality improvement. They also need to support and mentor other team members, while being able to effectively work in the health team. The scope of practice in level-one hospitals furthermore includes procedural skills in obstetrics, general surgery, anaesthetics and orthopaedics. [3,4,5]

The Western Cape Province is divided into four health regions, and a total of 25 health districts. District hospitals play an important role in rendering health services to communities, as demonstrated by the shift in outpatient attendance and in-patient admissions from the academic hospitals in the Western Cape to regional and district hospitals. The provincial authorities intend to further increase the shift of patients to lower levels of care in their 2010 strategic operational plan. Annual in-patient admission to district hospitals was 91 748, compared to 109 080 in the 3 academic hospitals in the province. In the year 2000/2001, the district hospitals delivered 17 343 babies and carried out 18 484 operations, as well as seeing to 201 869 emergency and trauma patients.[6]

A situation analysis was conducted to identify the professional knowledge and skills base required by medical officers to deliver district hospitals services in the Western Cape. The purpose of the study was to identify the knowledge and skills gap of medical practitioners delivering district hospital services and to utilize that to make recommendations regarding training and human resource strategies. This article reports on the demographic profile of medical practitioners in Western Cape district hospitals, emergency and trauma problems encountered at these hospitals, and operations and anaesthetics performed.

METHODOLOGY

All twenty-seven district hospitals in the province were included in the study. A contact person (medical superintendent or hospital matron) who assisted in the collection of the data was identified at each hospital with the help of the medical superintendent. District hospital data was collected from the casualty register (reason for encounter); theatre register (surgical procedures, types of anaesthetic); and routine monthly hospital report; and by completion of a questionnaire on hospital details such as number of beds, staff, referral hospital etc. All the medical officers (part-time, full time or community service) received a self-administered questionnaire. The questionnaires were piloted and adapted before administration.

Hospital reports and copies of theatre records were colleted for one month (May 2001). Casualty records were collected for a period of one month, which was reduced to seven days in May 2001 at the request of several hospitals due to the large numbers of patients seen at casualty. Site visits were carried out at twenty district hospitals to collect the data, questionnaires and conduct in-depth interviews (reported elsewhere). Outstanding information was collected by post and courier service. Telephonic, faxed, e-mail and couriered reminders were used to improve the response rate.

The records in the "presenting problem" column on the Casualty register were firstly coded and then grouped according to the ICPC-2 Classification.[7] The theatre procedures were grouped according to categories of surgery and anaesthetic (e.g. general surgery, obstetric etc). The numbers and categories, the information on the hospital reports and the questionnaire data were recorded on Microsoft Excel spreadsheets, and analysed with the SAS statistical package. (Statistical Analysis Systems, SAS Institute Inc, SAS Campus Drive, Cary, NC 27513).

Stellenbosch University Research Committee approved the study protocol (approval number 2001/C040). Permission to conduct the study was granted by the provincial authorities and additional permission was obtained from each hospital's medical superintendent. Informed consent was provided by each of the participating medical practitioners. The Health Systems Trust supported the project with a research grant.

RESULTS

All 27 district hospitals provided a 24-hour casualty and emergency service. All but 2 had a theatre service. The mean distance to a secondary referral hospital was 117,5 kilometers with the furthest 300 kilometres away. Eleven district hospitals indicated that they did not take part in outreach programmes to primary health care services. See Table I for the list and size of the district hospitals in the Western Cape.

A response rate of 75% was achieved with the practitioners' questionnaire as 110 medical officers returned completed questionnaires. Table II shows the proportional percentages of respondents compared with the total medical officer staff complement. Almost all (107; 97%) of the respondents were South African citizens. Twenty-eight (25%) of the respondents were female and 82 (75%) male. The average age of the respondents were 40.3 years (standard deviation 11.6; range 25-69). The female practitioners were statistically significantly younger than the males and had less years of experience, according to the Wilcoxon test ($p<0.05$).

The average length of time in practice since qualification was 15.6 years (standard deviation 11.1; range 2-48). The respondents' previous work experiences were mainly in general practice and secondly in district hospitals. There was a statistically significant difference ($p<0.05$), using

Table I: District hospitals and number of beds

Hospital	Beds
Oudtshoorn	146
Knysna	98
Malmesbury	98
Stellenbosch	97
Mossel Bay	90
Vredendal	84
Ceres	80
False Bay	65
Caledon	65
Riversdale	60
Beaufort West	60
Swellendam	57
Vredenburg	53
Clanwilliam	52
Montagu	49
Robertson	46
Bredasdorp	46
Hermanus	37
Prince Albert	35
Ladismith	35
Citrusdal	34
Laingsburg	28
Atlantis	28
Uniondale	26
Piketberg	22
Murraysburg	22
Porterville	15
TOTAL	**1528**

Table II: Comparison of questionnaire respondents with total medical officer complement

MO Category	Fulltime		Part-time		Community Service		Total	
	Number	%	Number	%	Number	%	Number	%
Total	32	22	95	65	20	14	147	100
Respondents	24	22	69	63	17	16	110	100

Table III: Most common presenting complaints in casualty departments (18 hospitals, 7-day period)

Reason for encounter	Number	Percentage
Musculoskeletal problems	399	12,1
Lacerations, bites, bruises	388	11,8
Assaults	294	8,9
Diarrhoea, vomiting, gastroenteritis	264	8
Tight chest, asthma	211	6,4
Chest problems (excluding asthma)	165	5
Upper respiratory tract problems	156	4,7
Neurological complaints, headaches	147	4,5
Abdominal pain	118	3,6
X-ray, ECG	90	2,7
General complaints (i.e. fever, weakness)	87	2,6
Procedures –POP, stitches, I and D	83	2,5
Bandages / dressings	76	2,3
Skin infections (abscess, cellulites, impetigo)	65	2
Psychiatric problems	65	2
Cardiovascular problems	57	1,7
Poisonings, drug overdose/reactions	55	1,7
Urological & male genital problems	48	1,5
Motor vehicle accidents	47	1,4

Table IV: Most commonly performed theatre procedures

Procedure	Number	Percentage
Dental procedures	264	15
Sterilization (female)	210	11,9
Caesarean section	196	11,1
Excision lumps, bumps	174	9,8
Tonsillectomy	112	9,6
Evacuation uterus, D & C	104	5,9
Incision and drainage	82	4,6
Closed reductions	59	3,3

the Kruskal-Wallis test, in ages and length of experience between the categories. The part-time practitioners had more experience and were older; the full timers younger than the part-timers and the community service doctors the youngest of all the categories.

The most common additional qualification acquired were various Colleges of Medicine of South Africa Diplomas, with 24% of respondents being in possession of such a qualification. 50% of the respondents had completed either an ATLS, ACLS or APLS course. Only 5% of the respondents were qualified family physicians.

A total of 20 hospitals submitted copies of casualty registers, of which 18 were suitable for analysis, totalling 3297 patients. Table III shows the nature, number and percentages of the commonly presenting complaints for casualty encounters. Musculo-skeletal problems were the most prevalent, followed by lacerations, bites, bruises, assaults, diarrhoea, vomiting and gastroenteritis.

Twenty-two hospitals submitted theatre records for 1 month, totaling 1770 theatre procedures. Figure 1 shows the comparison between groups of procedures, demonstrating that obstetrics and gynaecological procedures were the most commonly performed (34%), followed by general surgery (27%). Overall, dental extractions were the single most commonly performed procedure in district hospital theatres. Female sterilization, closely followed by caesarean section, was the most frequently performed procedure after dental extraction. Table IV shows the list of the commonly performed theatre procedures in the Western Cape district hospitals.

Table V demonstrates the obstetric and gynaecological procedures performed in the district hospitals. Evacuation of the uterus or dilatation and curettage (D&C) was performed most frequently after caesarean sections and sterilizations. Surgery for ectopic pregnancy was rarely performed. Table VI shows the procedures performed in the general surgery category. Excision and removal of lumps and bumps were performed most frequently followed by incision and drainage of various lesions.

Figure 1: Theatre procedures per discipline (1 month 22 hospitals)

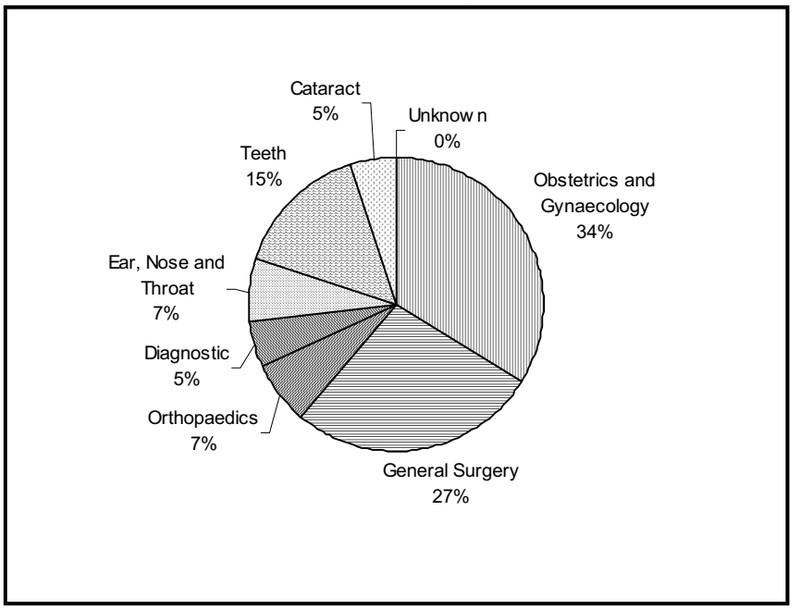


Table V: Obstetric and gynaecological procedures		
Procedure	**Number**	**Percentage**
Sterilization	210	11,9
Caesarean section	196	11,1
Evacuation, D&C	104	5,9
Others#	61	3,4
Hysterectomy	13	0,7
Ectopic pregnancy	7	0,4
# Others: 3rd degree tears, Bartholin cysts, Shirodkar sutures		

Table VI: General surgery procedures		
Procedure	**Number**	**Percentage**
Excision lumps, bumps	174	9,8
Incision and drainage	82	4,6
Urological procedures	44	2,5
Appendycectomy	30	1,7
Hernia repair	27	1,5
Debridement	27	1,5
Suturing major, minor	26	1,5
Various others#	21	1,2
Skin transplant	13	0,7
Laparotomy	13	0,7
#Others: gastrectomy, colostomy, Trendelenburg, mastectomy, thyroidectomy, cholisystectomy, and abdominoplasty.		

Skin transplant, laparotomy and haemorrhoidectomy were performed rarely. Visiting specialists generally performed the procedures listed under various others. Orthopaedic procedures were less frequently performed, and were predominantly closed reductions of fractures and dislocations. Cataract operations were performed at two hospitals during the study period as part of a private-public partnership.

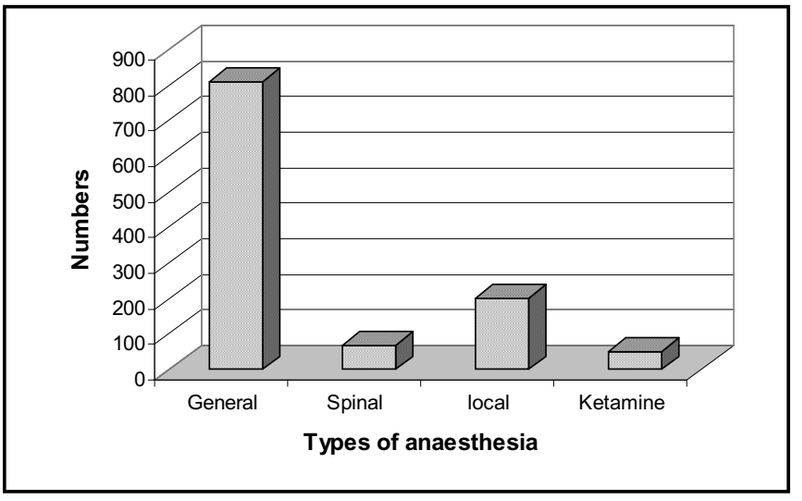
The types of anaesthesia used in the Western Cape district hospitals are reflected in Figure 2 demonstrating predominant use of general anaesthesia.

DISCUSSION

The district hospitals in the Western Cape conformed to WHO criteria of a first referral level-one hospital, but need to play a more substantial role in outreach and support of PHC services.[2] The demographic characteristics of district hospital medical practitioners in the Western Cape suggest that practitioners follow a career path via full time to part-time practice in combination with private practice. Almost half of doctors of rural origin currently in rural practice in South Africa, combine private practice with sessions at a public hospital or clinic, thus significantly contributing to the public health service.[8] This confirms the observation that "going back home" is not a common reason for doctors to work in public hospitals in South Africa, but is indeed the case in rural private practice.[9] The fact that almost all the medical officers staffing Western Cape district hospitals were South African is surprising, given the difficulties to recruit and retain South African doctors to other rural areas. A critical success factor for retaining experienced generalists in district hospital practice is the establishment of effective public-private partnerships with family practitioners in the private sector.

The morbidity profile of patients presenting at casualty departments indicated that district hospital medical officers spend a considerable amount of their time dealing with the effects of violence, which remains a major public health dilemma.[6] A large number of patients also present with PHC complaints. Practitioners must be educated in the morbidity profile of

Figure 2: Types of Anaesthesia used in district hospitals



patients presenting at emergency and trauma departments. They need to be equipped not only with the clinical and technical skills to deal with undifferentiated problems, but also develop and understand the impact of violence on health services and health care workers. ATLS or equivalent courses appear to be useful in acquiring trauma and emergency knowledge and skills. These courses utilizes a learning process which is effective in acquiring technical psychomotor skills.[10] The short sampling period for casualty data unfortunately limits the generalisability of these results.

One of the most striking findings from this study was that caesarean section, second to female sterilizations, was the most commonly performed surgical procedure in district hospitals. Caesarean section was also found to be commonly performed in district hospitals in KwaZulu-Natal, North West Province, Nigeria, and rural hospitals in Canada.[4,11,12] Outcomes of caesarean sections performed by family doctors compared favourably with national standards, and is thus a cost-effective way to provide an essential service to rural communities.[13,14] Maintaining viable obstetric units in community hospitals is however not a simple task, requiring staff with appropriate knowledge and skills and sufficient experience to provide a 24-hour maternity service.[15,16] Training in performing a caesarean section is thus of crucial importance for practitioners staffing district hospitals.

General anaesthesia is the most frequently performed form of anaesthesia used in district hospitals in the Western Cape. More use should be made of local, regional and spinal anaesthesia, and all doctors practicing in level one hospitals should learn and practice these techniques.[11,17] Of concern is a recent finding that South African interns expressed a lack of confidence in their ability to administer a general anaesthetic at the end of their internship year, despite a two-week obligatory anaesthetic rotation under supervision.[18]

The role of the generalist doctor in district hospitals in South Africa is extremely wide. Our study further clarified the scope of practice required for a medical practitioner to successfully practice in a level-one hospital. The data supports the importance for district hospital medical officers to be competent generalists, able to deal with undifferentiated problems ranging from simple primary health care complaints to multiple trauma cases. Emergency care skills, and the ability to perform a range of obstetric, surgical and orthopaedic procedures are essential.[19-22] Given that district hospital doctors carry out a wide variety of procedures, educators should ensure that graduates planning a career in such settings are competent in performing a defined spectrum of procedures.[23,24] Family Medicine training programmes should give particular attention to the provision of relevant education for district hospital medical practice.❐

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Are nurses the answer to the health needs of rural South Africa?

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Abstract

South Africa like many African countries is struggling to provide adequate health care to people living in rural areas. Extending the role of the nurse in the village clinic from prevention and care to diagnosis and treatment is a solution that has been tried in South Africa over the last 20 years. Is this an effective solution? During August 2001 a survey was carried out of the186 nurses who completed the Diploma in Clinical Nursing Science at Jubilee Hospital between 1982 and 2001 to find out what career pathway they have followed and whether the course equipped them for their new role as nurse clinician.

Responses to this survey showed that 88% felt the course adequately equipped them for their task and had resulted in improved self esteem and confidence in dealing with emergencies. Nearly 60% of respondents are still working in a primary health care clinic. However, a major problem is that the training is not keeping up with the demand. Only 25% of nurses working in the 3 districts nearest to Jubilee have completed the Diploma. In addition, 28% of these trained nurses are planning to leave within the next 2 years. More nurses need to be trained and the difficulties facing nurse clinicians in rural clinics need to be addressed.. *(SA Fam Pract 2003;45(7):20-22)*

INTRODUCTION

Providing health care to rural and remote areas is a problem in many countries. South Africa with its vast distances and large rural population has struggled to find an adequate solution to the health needs of all its people. Over the last 100 years there have been various attempts to provide modern health care to the many poor people living in rural areas. The initial phase was largely through the establishment of mission hospitals by various churches. In 1976 the South African Government nationalized all mission hospitals and gradually filled the gaps left by the old mission doctor with young doctors doing their compulsory national military service. Following the first democratic elections in 1994, the new Government allowed many foreign qualified-doctors, especially from other African countries and Cuba, to work in the rural hospitals to replace the army doctors. In 1999 a year of compulsory community service following internship was introduced for all newly qualified South Africa medical graduates. It has become evident that replacing senior doctors in rural areas with largely inexperienced juniors whose main training has been in urban tertiary hospitals creates problems.[1] In contemplating the future, especially in the light of the AIDS epidemic sweeping through these very rural areas, what is the way forward? Should it be through continued coercion of local junior doctors, or incentives to foreign doctors, or is it possible to provide modern health care through an entirely different source?

Nurses working in small clinics in rural villages and urban townships have for the past 50 years provided the bulk of preventive and promotive health care in these communities. Most of the curative services were provided by visiting doctors employed by the state. In 1976, political unrest made it difficult for the state to find doctors who were willing to work in these areas. To continue to provide curative care, especially for the paediatric age group, the role of the clinic nurse was extended and training courses for these nurses were introduced initially in Soweto and Cape Town.[2,3] The success of this approach led to the courses being broadened to include adult illnesses.[4] Training later spread to other places in South Africa.[5,6] In 1982 the South Africa Nursing Council introduced a Diploma in Clinical Nursing Science to co-ordinate and standardise the evolving comprehensive course. Jubilee Hospital, a 500 bed district hospital situated 50 km north of Pretoria, and at that stage under the control of the Bophuthatswana homeland government, was one of the first hospitals to offer training for this Diploma. As one looks back over the 20 years since then, the question arises….

ARE NURSES THE ANSWER TO THE HEALTH NEEDS OF RURAL COMMUNITIES?

To answer this question, one first needs to answer 2 other questions. Firstly, does the training of these nurses in Clinical Nursing Science equip them for this job and secondly, are they willing to work in rural communities?

A postal survey, of the 186 nurses who were trained for this Diploma at Jubilee Hospital between 1982 and 2001, was sent out in August 2001. It was aimed at finding out what career pathway they had followed after completing the diploma and whether their training had equipped them for working in a rural primary care environment.

The addresses were obtained from the nursing school's records many of which were outdated and did not provide current addresses. A second round of questionnaires was sent out by hand to nurses who had not replied and who were still working in the districts around Jubilee Hospital. Despite these difficulties of out of date postal addresses, 77 responses (41%) were received. In addition, it is known that 4 of the Diploma nurses have died, 3 have retired and 2 are working overseas.

What was learned from this study?

1. Equipped for the job?

Over 88 % (68/77) of the respondents said that the training had equipped them for their work in PHC and many emphasized the need for all nurses working in district clinics to do the course. At present only 25% of nurses working in the clinics in the 3 districts around Jubilee Hospital have PHC training. Over the years there had, however, been some problems with the training at Jubilee. Nursing tutors and doctors who were experienced in working at a primary care level and who were willing to teach nurses, were not always available.

Four respondents said the course had only partially equipped them for their work. They mentioned lack of skills in the examination of the eye and in dealing with emergencies One nurse with a special interest in psychiatry had hoped for more training in psychiatric illnesses. Another was dissatisfied with the training facilities at the rural clinics where she did her practical training. The dissatisfaction of others, however, was not related to the course but was because they had had to return to the hospital wards instead of being allocated to a PHC clinic.

2. Career pathway

Nearly 60% (46/77) were still working in a PHC setting. Those that had left, had moved to the following new areas of work. Nine had been promoted to administrative positions, 9 had returned to hospital ward work, 5 were involved in teaching/lecturing, 5 had branched out into occupational health, public health and epidemiology or school health, while 2 had gone to work in the private sector and 1 was now involved in community psychiatric services. What was very significant was that of the 20 nurses who were working in a hospital post prior to doing this course, only 3 were still in PHC.

A worrying aspect is that of the 46 still practicing in PHC, 13 (28%) are planning to leave in the near future. Four are going to the private sector, 3 wish to leave nursing altogether, 2 are planning to go overseas, 1 is going to retire and the remaining 3 want to change to other areas of nursing such as paediatrics, psychiatry and occupational health. Poor facilities, transport difficulties, staff shortages, lack of support from their managers and lack of opportunities for promotion or professional growth were mentioned as the reasons for wanting to leave.

3. Comments of the nurses

Perhaps the most interesting aspect of this project, were the comments of the nurses. These have been grouped under common recurring themes mentioned by the respondents

Personal Growth and an improved health service

Improved self confidence and self esteem were referred to by many of the respondents. They felt proud of their new skills and the improved standard of their work. The following comment expresses this in a delightful way.

PHC training is a new achievement in one's life that turns things upside down towards a better future. It is like climbing on top of a mountain and screaming, "I am a big, proud, equipped person, at long last!"

Lack of money had prevented one of the nurses from becoming a doctor. She mentioned that the course had partially substituted for her original goal. Several others commented on feeling like mini-doctors.

For many, their new skill and confidence in handling emergencies without panicking was a major achievement of the course. They felt confident in coping with such diverse conditions as eclampsia, anaphylaxic shock, severe asthma, victims of assault or traffic accidents or a ruptured ectopic pregnancy. The most dramatic was the following incident.

On the 16 December 1997, I was working in a rural clinic when I saw a white pick-up van coming through the gate of the clinic. I saw a lot of blood dripping from the sides of the van and a heap of something on the back. I thought, "Oh well, it is a slaughtered cow." I didn't bother to wait and see. Suddenly the driver jumped out and yelled, "Help! Help! Help!" I rushed to the van only to discover the heap was a young man who was stabbed in the heart. The knife still in place. His chest bones had also been broken by blows from a pick handle. He was bleeding profusely. Because of the skill learnt from the PHC training, I quickly put up 3 IV lines, tied up the chest, left the knife in situ, phoned the hospital and accompanied the patient on the back of the open van. On reaching the referral hospital I found the doctors ready to take the patient to the operating theatre. Later he was air-lifted to Cape Town for further heart surgery. The patient survived.

In 1991, there was a severe shortage of doctors at one district hospital. The PHC nurses had to manage the Outpatients and Casualty Departments largely on their own and thus they were able to save the hospital from closing down.

In most cases their new skills contributed to improved relationships with their medical and nursing colleagues. They were able to help and teach the junior doctors and the nurses who lacked this training. The quality of their referrals improved and they were

able to discuss patients in a more meaningful way. They appreciated being recognised by their colleagues and their patients as 'clever' nurses.

Studies can put extra strain on the family life of adult learners, however, most of the respondents indicated that their families were supportive.

My family was so excited and my father-in-law called me, "Doctor". My husband bought me a stethescope and a Baumanometer.

Negative Effects

There were, however, a number of negative effects.

I have acquired new skills but am now perceived as a 'super nurse' and am expected to do clinical work, management work and community work and to be perfect in all three.

There was also some friction with non-PHC trained colleagues who did not appreciate being corrected. Some PHC nurses were labeled '*that stethoscope nurse'* or '*JACCOL*'* and were accused of wasting time or of being proud. Some doctors felt threatened or alternatively tried to take advantage of them by shifting their work onto the PHC nurses.

The doctors no longer want to consult patients when we are on duty. When they are phoned to come and see patients, they ask, "Where is Sr. So-and-so? Please ask her to see that patient".

Most of the trainees were mature students with children. Trying to cope with studying, travelling or being away from home, put a strain on some marital relationships. Unfortunately, 5 of the marriages ended during or shortly after the course.

A source of great frustration occurred when some nurses returned to their hospitals and were not allocated to a clinic or primary care setting.

I was demoralised by not being recognised. Due to shortage of staff, I was allocated to the maternity ward and have not practiced as a PHC nurse.

Other frustrations included travelling costs, poor facilities, lack of equipment, large patient loads, night duty, lack of promotional opportunities and insensitive responses by their managers to complaints about these problems. There was a strong recommendation from the trainees that the course should only be offered to nurses who were already working in a clinic. Follow-up visits by the trainers, to check on the placement of students, were also requested.

Concern

Of great concern is that 28% (13/46) of the trained nurses still working in a primary care setting, are planning shortly to leave nursing, move to the private sector, retire or go overseas. To keep up with these losses, it will be necessary to increase the number of nurses being trained every year and to ensure that they are correctly allocated. At present only 25% of the nurses working in the village clinics in the 3 districts around Jubilee Hospital have completed the diploma.

CONCLUSION

In conclusion, although care should be taken about generalizing these results, it would appear that, firstly, the training is perceived to be appropriate and secondly, that 60% of the respondents have remained working in a primary health care setting. Thus with proper support and appropriate allocation, nurses who have completed the Diploma in Clinical Nursing Science could become a possible alternative way to meet the health needs of a large part of rural South Africa. However, the numbers trained and the percentage retained will need to be increased dramatically if PHC nurses are to fulfil their rightful role in meeting the health needs of rural people in South Africa.❐

** JACCOL is a commonly used acronym for jaundice, anaemia, cyanosis, clubbing, oedema & lymphadenopathy.*

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