SURGICAL REGISTRARS KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING HOSPITAL DISASTER PREPAREDNESS ACROSS 3 TERTIARY HOSPITALS IN GAUTENG

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DECLARATION

I, ***Ms Joanne Sahdeo***, hereby declare that the work on which this dissertation is based is my own original work (except where acknowledgments indicate otherwise) and that neither the whole nor any part of it has been submitted for another degree in this or any other University. I empower the University of the Witwatersrand to reproduce either the whole or any portion of this work for the purposes of research.

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DEDICATION

To all those individuals

Who have inspired me to be the greatest person I could be

ACKNOWLEDGEMENTS

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ABSTRACT

This study seeks to serve as a baseline survey of the knowledge, attitudes and practices (KAP) of surgical registrars concerning hospital disaster preparedness across 3 tertiary hospitals in Gauteng. This is owing to the fact that a perusal of the relevant literature reveals that while considerable research exists for the assessment of hospital disaster preparedness within an international context, there was a lack of information pertaining to the South African setting.

A stratified random sampling process was applied to 30 surgical registrars who were asked to complete a self-administered questionnaire. Thus the study design was a cross sectional descriptive study of the surgical registrars working across 3 tertiary hospitals in Gauteng.

A response rate of 83% was achieved. The study concluded that while 80% of surgical registrars surveyed had an excellent level of knowledge about hospital disaster preparedness, only 52% of the respondents have positive attitudes towards hospital disaster preparedness. An overwhelming majority of the surgical registrars (84%) reported poor practices concerning hospital disaster preparedness.

The findings of this study has lead to the following key recommendations being made: a) the need for a dedicated national hospital disaster preparedness fund, b) the provision of regular in-service training on hospital disaster preparedness with special attention being given to registrars with greater than 11 years of clinical experience c) need for hospital disaster preparedness training to adhere to some form of quality control d) setting up of a

task team to conduct regular audits on the practices of hospitals in terms of disaster preparedness.

DEFINITION OF TERMS

Attitude: "…are positive or negative views of an "attitude object": i.e. a person**,** behaviour or event. People can also be "ambivalent" towards a target, meaning that they simultaneously possess a positive and a negative attitude". [1]

SPSS: "Statistical Package for Social Sciences"-A statistical software programme used to analyze data .[1]

Surgical registrars: It is a doctor in the process of specialist training in surgery. [1]

Knowledge: "is information of which a person, organization or other entity is aware. Knowledge is gained either by experience, learning and perception or through association and reasoning." [1]

Practice: "… practice refers to a way that something is done. Practice is also something that is done with the deliberate aim of learning**".** [1]

Stratified random sampling: “In statistics, stratified sampling is a method of sampling from a population. When sub-populations vary considerably, it is advantageous to sample each subpopulation (stratum) independently. Stratification is the process of grouping members of the population into relatively homogeneous subgroups before sampling. The strata should be mutually exclusive: every element in the population must be assigned to only one stratum. The strata should also be collectively exhaustive: no population element can be excluded. Then random or systematic sampling is applied within each stratum. This often improves the representativeness of the sample by reducing sampling error”. [1]

Tertiary Hospital: “A major hospital that usually has a full complement of services including pediatrics**,** general medicine, various branches of surgery and psychiatry”.[1]

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CHAPTER 1

1.0 Introduction

The hospital disaster planning process involves four (4) phases, namely mitigation, preparedness, response and recovery [2.] "Hospital emergency planning serves 2 main functions: protection of the hospital, hospital services, patients and staff from harm caused either internally or externally" [3]. Further, effective disaster planning requires representatives from all categories of staff [2]. Although the hospital disaster planning process involves 4 crucial phases and all staff categories are critical to the disaster planning process, this study however, seeks to focus on one specific phase namely preparedness and one specific category of staff, namely surgical registrars. Thus the objective of this study is to assess the knowledge, attitude and practices of surgical registrars concerning hospital disaster preparedness.

Preparedness is defined as "activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary removal of people and property from threatened locations"[4]
"Preparedness is one of the key foundations in emergency management" and includes activities, such as "emergency planning, the provision of emergency equipment and supplies, conducting or arranging appropriate training for emergency responders, emergency management personnel, other local officials and volunteer groups who assist us during emergencies, and conducting periodic drills and exercises to test our plans and training"[5.]

The preparedness activities outlined above, serve to minimize the damage caused to property and disruptions that co-occur with a disaster event, but more importantly it serves

to save lives and reduce the number of injuries [5]. Furthermore, it is more cost effective to implement programmes aimed at prevention and preparedness than relief efforts [6].The latter is especially relevant for developing countries like South Africa, where financial resources are limited to effectively deal with the aftermath of disasters. Therefore, it is imperative from a public health perspective to channel resources and efforts into programmes, which advocate prevention and preparedness.

1.1 Background

A study, which aimed to examine British hospitals readiness for a major incident, was conducted in 2004 among 179 registrars in 34 different units [7]. A distinct benefit of including 34 different units is that it allows for comparison of the registrars across different specialities. The study which achieved an 80% response rate, revealed that 47% of the registrars had not read any of their hospitals major incident plans, and only 54% were confident in the knowledge of their specific role during a major incident [7.]

One of the mechanisms used to improve the confidence level of hospital staff during a disaster is to have regular training sessions, which would ultimately serve to enhance their knowledge, attitude and practices.

According to Quarantelli "the most important principle of good disaster preparedness planning is that it must include training as a key component"[8]. In support of the above, Lavery and Horan have stated "while many institutions/governments agencies has drawn up major incident plans, these are often missing vital elements such as education/training and a coordinated approach to communication" [9]. With respect to the former vital element conducting periodic drills can serve as a medium for training to occur. "Enough studies are

available to suggest that hospital disaster drills can help to identify problems with incident command, communication, triage, patient flow, security and other issues"[10]. Despite this the findings of a survey conducted in 2002 revealed that 'fewer than half of the hospitals have conducted drills or exercises simulating response to a bio-terrorist attack"[11]. Drills and simulations provide opportunities for all parties involved in responding to a disaster to evaluate the effectiveness and efficiency of the plan and make amendments where necessary.

In addition to conducting periodic drills, a recent study, which involved 256 registrars has shown that having disaster preparedness training classes is an effective medium to increase surgical registrars knowledge on the hospital disaster plan [12]. Participants were required to attend a 6 hour training session. A pre and post test survey was conducted to assess their emergency preparedness knowledge. According to the results of the study only 1.1% of the registrars achieved a pass mark in the pre test survey while an overwhelming 89.8% passed the post test survey[12], thereby validating the need for implementing preparedness training programmes to improve surgical registrars emergency preparedness knowledge.

In 2004, a survey was conducted to assess the current state of awareness and training of specialist registrars, in the Wessex region, in the event of a "conventional" major incident [13]. In contrast to the survey cited earlier by Wong et al, this study revealed that staff reported a lack of confidence about their role in the event of a major incident [13]. Further, most of the specialist registrars questioned had never attended a major incident training exercise [13]. Despite the limitations of conducting telephonic interviews, the results obtained from the study do provide evidence that supports the need for assessing the

practices of surgical registrars in South Africa regarding training of staff and conducting periodic drills.

Further, a survey of medical staffs, which was conducted throughout the South East Thames Region, concurs with the above findings and concluded "all staff lack training in clinical and administrative aspects of major incident planning and disaster medicine"[14]. "Insufficient staff training has been identified as a problem in the preparation of hospitals for major incidents" [14] Wong et al, cited the following as limitations to enhancing major incident planning: "lack of funds, lack of a designated full time major incident co-ordinator, and a lack of technology"[7]. All of the above mentioned limitations are quite pertinent to a developing country like South Africa.

Given the value of training and periodic drills to hospital disaster preparedness, thus it is imperative that the knowledge, attitude and practices of surgical registrars pertaining to the above should be assessed.

In addition to training, the provision of emergency equipment and supplies is an important preparedness activity.

A study investigating hospital preparedness in Osaka (Japan) revealed that the hospitals surveyed were inadequately prepared in terms of self-sufficiency in electrical, gas, water, food, and medical supplies in the event of a disaster [15]. The data for the above mentioned study was obtained via mailed questionnaires. A limitation of the data collection method used is that the researcher may have difficulty assessing who completed the questionnaire

[15.] Despite this limitation, the findings of the study further revealed that only 8% of the respondents had drugs stockpiled for disasters, while only 6% had medical supplies available for use in a disaster situation[15]. According to Murnane and Cooper a medicines stockpile includes "stocks of antidotes, antibodies, personal protective equipment, ventilators and negative pressure units"[16]. The findings of a survey conducted in 2002 concurs with the results of the study conducted in Osaka, where it was reported that the majority of the hospitals in urban areas had insufficient medical equipment to respond effectively to the influx of patients that is characteristic of a bio-terrorist incident [11].

In keeping with the above, "…a major area of operation that hospitals have a problem with is resource allocation shortages"[17.] Inadequate planning in terms of medical supplies, staff, food, water supplies, communication etc would invariably serve to compromise the quality of care provided to patients during a time of disaster. In terms of staff shortages, Loutfy et al cited insufficient personnel as being the greatest challenge in dealing with the Severe Acute Respiratory Syndrome (SARS) outbreak in Toronto[18]. Therefore it is imperative that advance planning be done to ensure that an adequate number of staff are allocated and are on standby to effectively respond to a disaster situation.

With respect to communication, Lavery and Horan have cited a number of articles that have reported extensive problems with communication in other mass incidents[9]. In addition, Lavery and Horan states "the early distribution of accurate and relevant information to relatives and victims with minor injuries may be important in preventing problems post trauma"[9]. A hospitals communication system may improve by the use of business radios, a phone intercom system powered by emergency generators, status boards

and runners[19]. The two latter suggestions can serve as a very cost effective and efficient mechanism to disseminate information during a hospital disaster especially in a South African context, where financial resources are limited. Therefore, it is imperative that surgical registrars' knowledge be assessed concerning access to the provision of emergency supplies and other critical resources such as communication as these are important activities of hospital disaster preparedness [5.]

1.2 **Motivation**

A perusal of the relevant literature reveals that while considerable research exists for the assessment of hospital disaster preparedness within an international context, there was a lack of information pertaining to the South African setting. This study would therefore serve as a baseline survey of the knowledge, attitudes and practices of surgical registrars concerning hospital disaster preparedness within South Africa. Further, given that the study is descriptive in nature, it would also serve to "give service providers and planners information that would help them design services and allocate resources efficiently"[20] .The latter is especially relevant for developing countries like South Africa, where financial and human resources are limited and should therefore be utilized optimally in preventative and preparedness programmes.

In addition, given that South Africa and in particular Gauteng province will be hosting the 2010 Soccer World Cup Event, it is imperative that hospitals in South Africa be adequately prepared to effectively and efficiently manage a disaster situation should it arise.

1.3 **Study Aim**

The aim of the study was to assess surgical registrars' knowledge; attitude and practices concerning hospital disaster preparedness in 3 tertiary hospitals located in the Gauteng Province during the year 2007.

1.4 **Objectives**

1.4.1 To determine the demographical information of a sample of 30 surgical registrars working in 3 tertiary hospitals in Gauteng.

1.4.2 To assess the knowledge and attitudes of a sample of 30 surgical registrars working in 3 tertiary hospitals in Gauteng regarding emergency planning and the provision of emergency equipment, and **a**ppropriate training opportunities and the testing of plans via periodic drills and exercises.

1.4.3 To assess the practices of a sample of 30 surgical registrars working in 3 tertiary hospitals in Gauteng regarding emergency planning and the provision of emergency equipment and appropriate training opportunities and the testing of plans via periodic drills and exercises.

CHAPTER 2

2.0 Research Methodology

2.1 Study Design

The study design was a cross-sectional descriptive study of surgical registrars working in 3 tertiary hospitals located in Gauteng.

2.2 Study population

- The study population was surgical registrars working in 3 tertiary hospitals located in Gauteng Province.
- All surgical registrars, irrespective of their level of training had an equal opportunity of being randomly selected to participate in the study.

2.3 Study sample

- Permission was sought to access surgical registrars practicing in Gauteng from the Department of Surgery at the University of the Witwatersrand, JHB and the University of Pretoria during staff presentation meetings.
- A stratified random sampling process was applied to surgical registrars and the following strata were identified to ensure that the sample was representative: a) gender b) number of years in the surgical registrar programme c) area of undergraduate training d) area of internship e) number of years of clinical experience.
- The sample size selected for this study was 30 out of a total of 112.
- All participants were registered with the Health Professionals Council of South Africa and were employed by the Gauteng Department Health. Since the aim of the study was to investigate surgical registrars' knowledge, attitude and practices concerning hospital disaster preparedness in the public health sector in Gauteng, it

was important that all participants were employed by the Gauteng Department of Health.

2.4 Measurements and data sources

The researcher pre-arranged to attend training meetings with all surgical registrars working in the identified hospitals on specified dates and times. At the meeting, surgical registrars were invited to participate in the study, since "self administered questionnaires are commonly completed in groups"[20]. The registrars were then asked to complete a self-administered questionnaire.

The self-administered questionnaire *(Please refer to Appendix 7A)* included both closed and open-ended questions. The questionnaire comprised of three (3) sections: **Section A** which focused on demographic information such as where did they receive their undergraduate training (international or national), where did they complete their internship (urban or rural), how many years have they been in the surgical registrar programme (first or fourth year), which hospitals are they rotating in for their surgical registrar programme. **Section B** explored the knowledge and attitudes of surgical registrars regarding emergency planning, the provision of emergency supplies and equipment while **section C** described the surgical registrars' practices regarding training of staff, conducting periodic drills and exercises. Thus the study variables in the study included the following areas:

- Demographic information
- Knowledge and attitudes of emergency planning and the provision of emergency supplies and equipment
- Practices regarding training of staff and conducting periodic drills and exercises.

The questionnaire took participants approximately 15 –20 minutes to complete.

2.5 Data Processing Methods and Data Analysis Plans

Data checking was implemented prior to any data analysis-taking place. It was important to check the data set so that any errors and strange values can be identified, as these can influence and bias the results [20]. This was achieved by double entry of data, which served to minimize typing and other errors [20] .All the responses obtained for the open-ended questions from the surgical registrars were listed. The answers that seem to belong together were coded using a key word. Thereafter all the answers were listed again, but now per code and analysed. The data obtained was entered into a compilation sheet. The analysis involved categorizing the participant's levels of knowledge about hospital disaster preparedness according to the rating scale that was devised in consultation with the statistician. The rating scale used is described below.

Table 2.1 Rating scale used to categorise surgical registrars knowledge levels regarding hospital disaster preparedness levels

	Categories used to describe the knowledge levels of surgical registrars	**Description of the selection criteria for each category**
1	Poor level of knowledge	7 and < out of the 14 knowledge questions correct
2	Good level of knowledge	8 out of the 14 knowledge questions correct
3	Very good level of knowledge	9 out of the 14 knowledge questions correct
4	Excellent level of knowledge	10 and > of the 14 knowledge questions correct

A similar process was applied to the questions pertaining to attitude and practice. The rating scale described below was used.

Table 2.2 Rating scale used to categorise surgical registrars attitudes regarding hospital disaster preparedness levels

	Categories used to describe the attitudes of surgical registrars	**Description of the selection criteria for each category**
1	Positive views about hospital disaster preparedness	Answered 4-5 questions with yes
2	Neutral views about hospital disaster preparedness	Answered 3 questions with yes
3	Negative views about hospital disaster preparedness	Answered 1-2 questions with yes

Table 2.3 Rating scale used to categorise surgical registrars practices regarding hospital disaster preparedness levels

	Categories used to describe the practices of surgical registrars	**Description of the selection criteria for each category**
1	Good practices are being implemented	Answered 3-4 questions with yes
2	Average practices are implemented	Answered 2 questions with yes
3	Poor practices are being implemented	Answered <2 questions with yes

Statistical Package of Social Sciences (Version13)) was utilized to analyze the data obtained.

2.6 Piloting

A pilot study was conducted to pre-test the administration of the questionnaire among 5 orthopaedic registrars [21]. This process ensured that the questions in the questionnaire were

clear and concise. Further, it revealed to the researcher if any of the terms/language used were not understood or unclear. The questionnaire was adapted, based on the feedback obtained from the pilot survey.

2.7 Ethical Considerations

Ethical clearance was obtained from the University of the Witwatersrand Committee for Research on Human Subjects (Medical*)*. Further, permission was obtained from the Chief Executive Officer of the hospitals identified as well as the Head of the Department Surgery to conduct the study.

An information sheet was attached to the self-administered questionnaire, explaining the reasons for the study, what is expected of the participants and the benefits of participation. Another important issue such as confidentiality was also addressed in the information sheet. Participants were randomly selected and invited to participate during staff meetings. Participants who were randomly selected and who wish to participate in the study had to complete the questionnaire that would be distributed by the researcher. Completion of the questionnaire, albeit anonymously indicated the participant's written consent to participate in the study. The participant then returned the questionnaire to a predetermined place where a box was left to receive it. The study was voluntary and participants were permitted to withdraw at any time without providing a reason. No person who did not wish to participate was disadvantaged in any way. Confidentiality was maintained at all times. No names were required at any stage during the research and the study number was not linked back to any participant. The results were reported in a group format.

2.8 Possible Limitations

In this study possible limitations include the following:

- Since the data collection process took place during a staff meeting, it was possible that the attendance of surgical registrars were poor, either because of heavy patient loads or prior commitments on the date of the meeting. Thus there was a possibility that the response rate for the study would be low.
- Since the self administered questionnaire were completed in a group context, it was possible that some surgical registrars would confer with each other and thus the responses obtained were not a true reflection of the participant's knowledge, attitude and practices.
- Open-ended questions yielded very short responses from the surgical registrars. Thus the information obtained may be insufficient to compile an in-depth report on their views.
- Since the surgical registrars were required to write in their answers, it is possible that the researcher may have difficulty reading the answers during the data processing and analysing phase.
- Further there would be no opportunity to clarify answers as in an interview method.
- The questionnaire failed to determine which surgical speciality that the respondent was currently completing. It would have been interesting to compare the knowledge, attitude and practice levels across the different specialities.

CHAPTER 3

Thirty surgical registrars were selected to participate in the study. However, only a total of 25 surgical registrars participated, thus giving a response rate of 83%.

3.1 Demographic Information of the participants in the study

A summary of the demographic information of the respondents is presented in the following six pages.

3.1.1 Percentage of male and female surgical registrars in the study

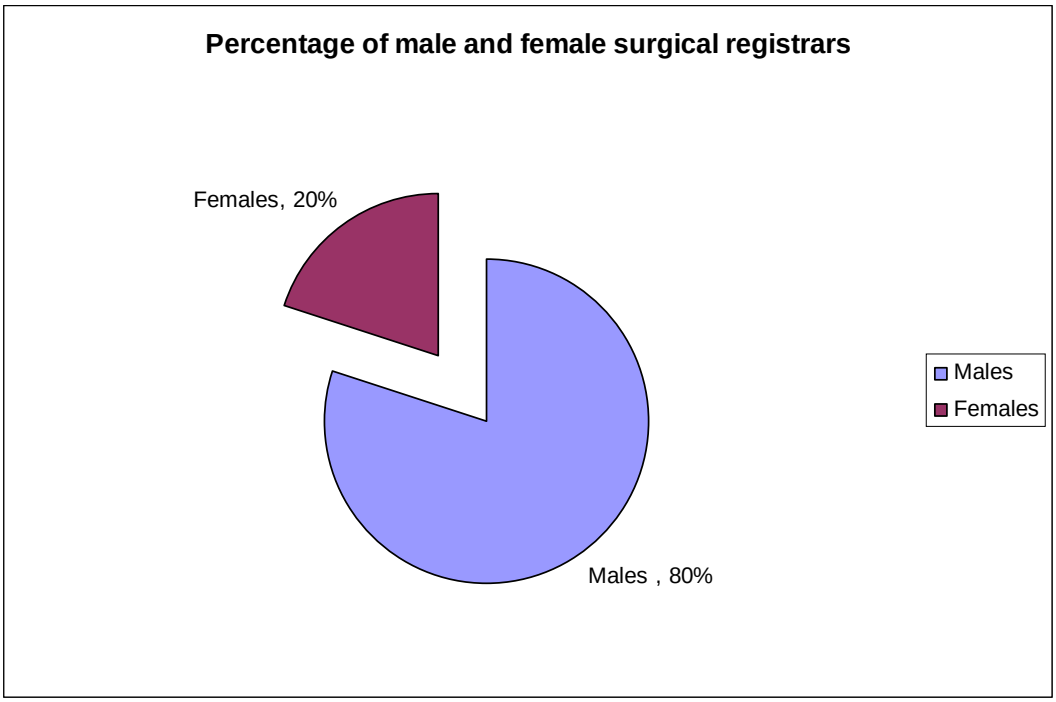

Figure 3.1 Pie graph illustrating the percentage of male and female surgical registrars in the study

Eighty percent (80%) of the 25 surgical registrars identified in the study were male. The female surgical registrars accounted for the remaining twenty percent (n=5) of the study sample.

3.1.2 Location where surgical registrars completed their undergraduate medical training (international or national)

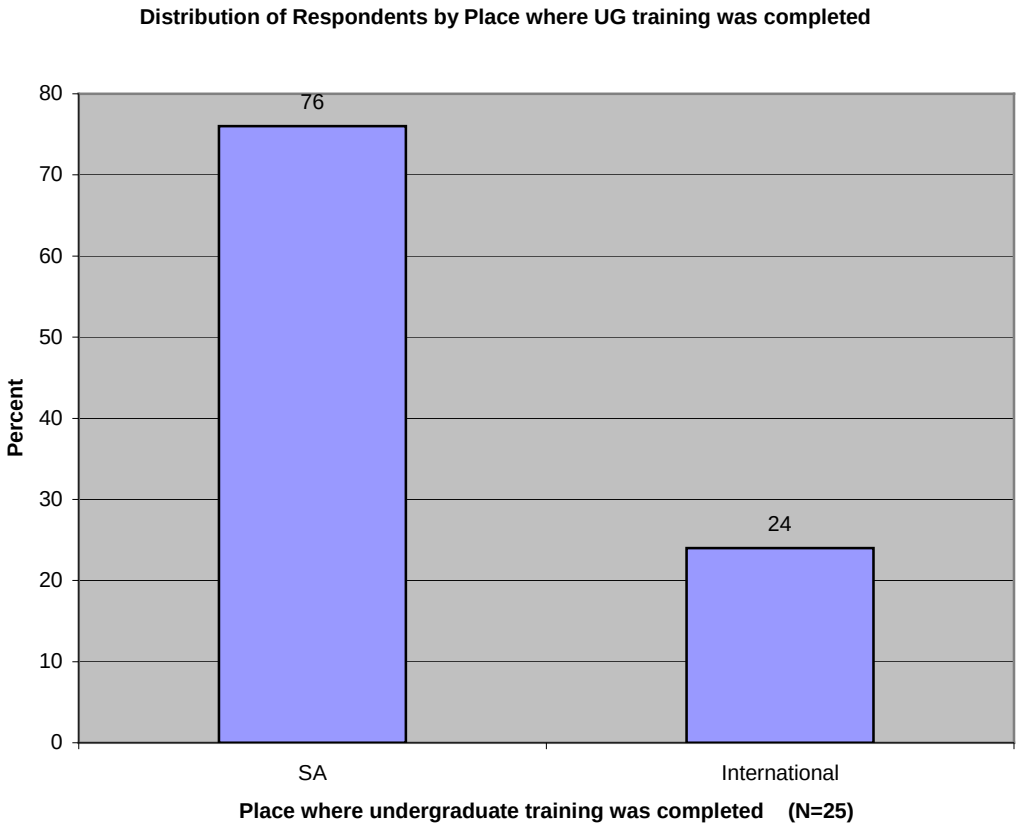

Figure 3.2 Bar graph illustrating the percentage of surgical registrars that completed their undergraduate medical training internationally and in South Africa

The findings revealed that a total of seventy six percent (n=19) of the surgical registrars sampled, completed their undergraduate medical training in South Africa, while the remaining twenty four percent (n=6) completed their undergraduate medical training internationally.

3.1.3 Area where surgical registrars completed their internship (rural or urban)

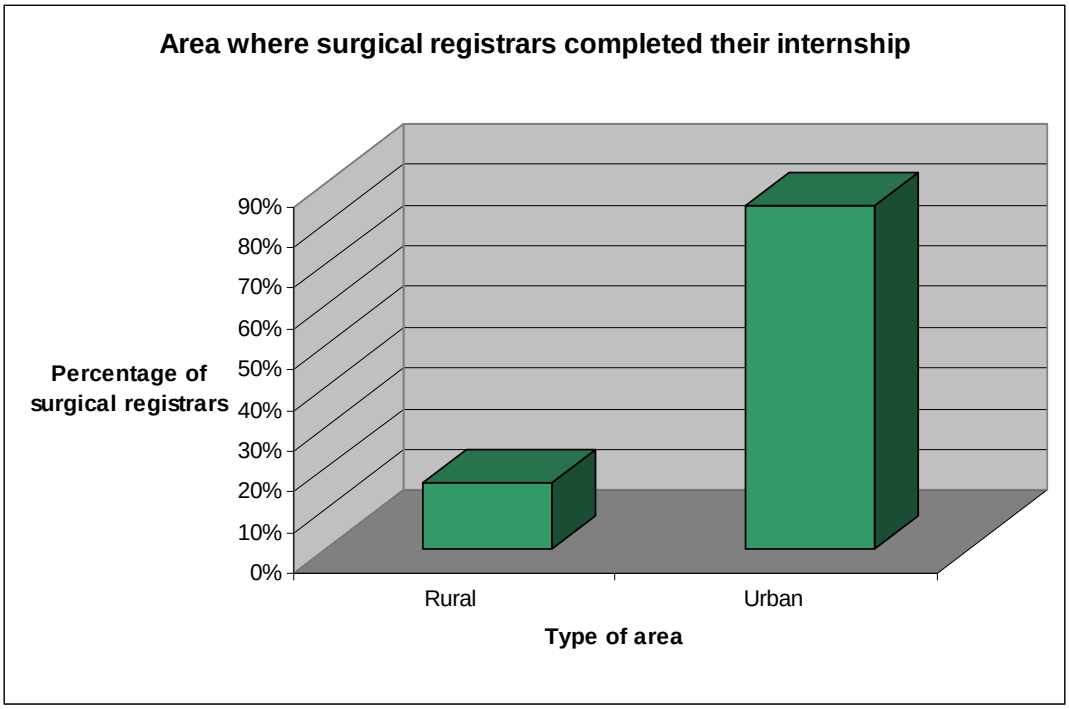

Figure 3.3 Bar graph illustrating the percentage of surgical registrars that completed their internship in either a rural or urban setting

A total of 84% (n=21) of the surgical registrars sampled completed their internship in an urban area; while a mere sixteen percent (n=4) completed their internship in a rural area.

3.1.4 Number of years that the participant has been in the surgical registrars programme

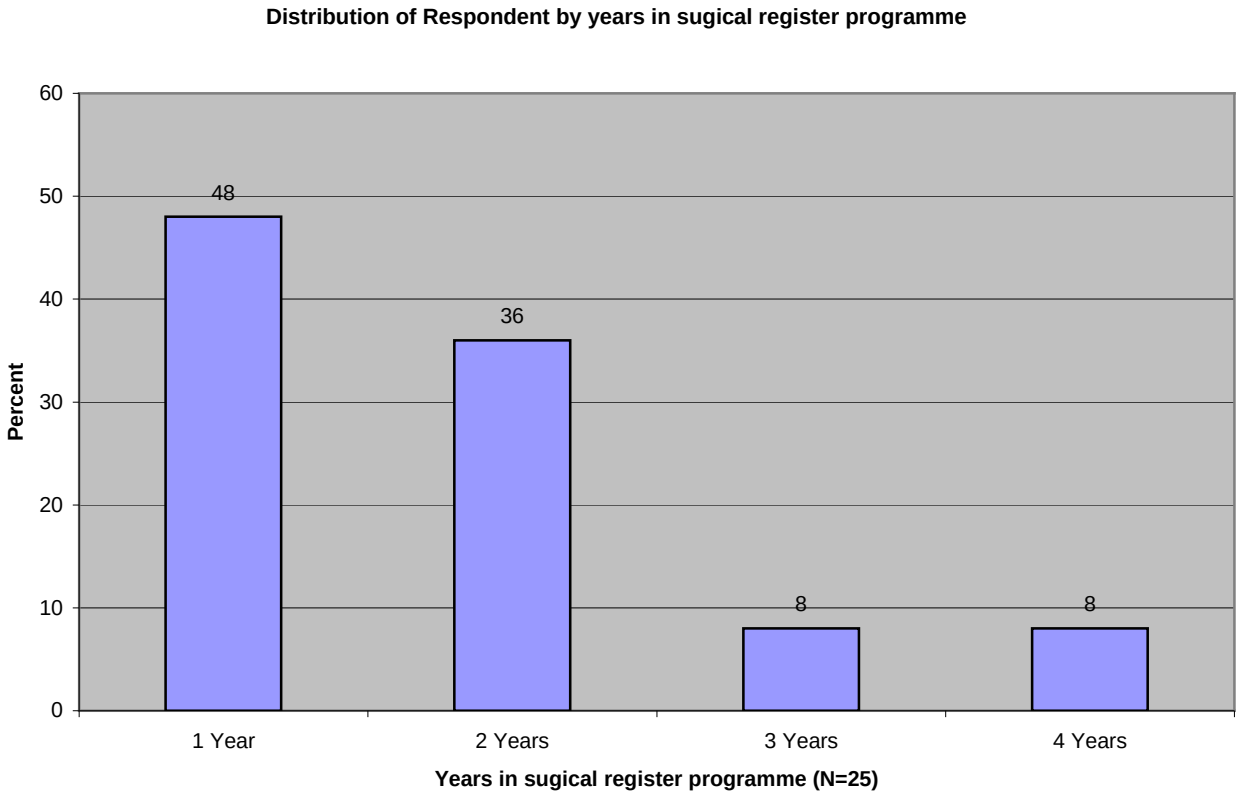

Figure 3.4 Bar graph illustrating the percentage of surgical registrars in the study that are in year 1 to 4 of the surgical registrar programme

From the above, it is evident that forty eight percent (n=12) of the surgical registrars sampled in the study were in year one of the surgical registrars programme, while thirty six percent (n=9) were currently in year two of the surgical registrars programme. Both the third and the fourth year of the surgical registrars programme accounted for eight percent (n=4) of the surgical registrars respectively.

3.1.5 Names of hospitals that surgical registrars rotated in for their surgical registrar programme.

Table 3.1 The frequency counts and percentage of surgical registrars that rotate among the different tertiary hospitals in Gauteng

Hospital rotated in for surgical programme

	Frequency	Percent
JHB Only	1	4
CHB & JHB	1	4
CHB & JHB & HJ	16	64
PTA Academic & Kalafong	6	24
Not Specified	1	4
Total	25	100

More than half the respondents (64%) reported that they rotated among the following tertiary hospitals: Chris Hani Baragwanth, Johannesburg hospital and Helen Joseph. Pretoria Academic and Kalafong Hospital accounted for 24% of the surgical registrars rotation in the surgical registrar programme.

3.1.6 Surgical Registrars total years of experience

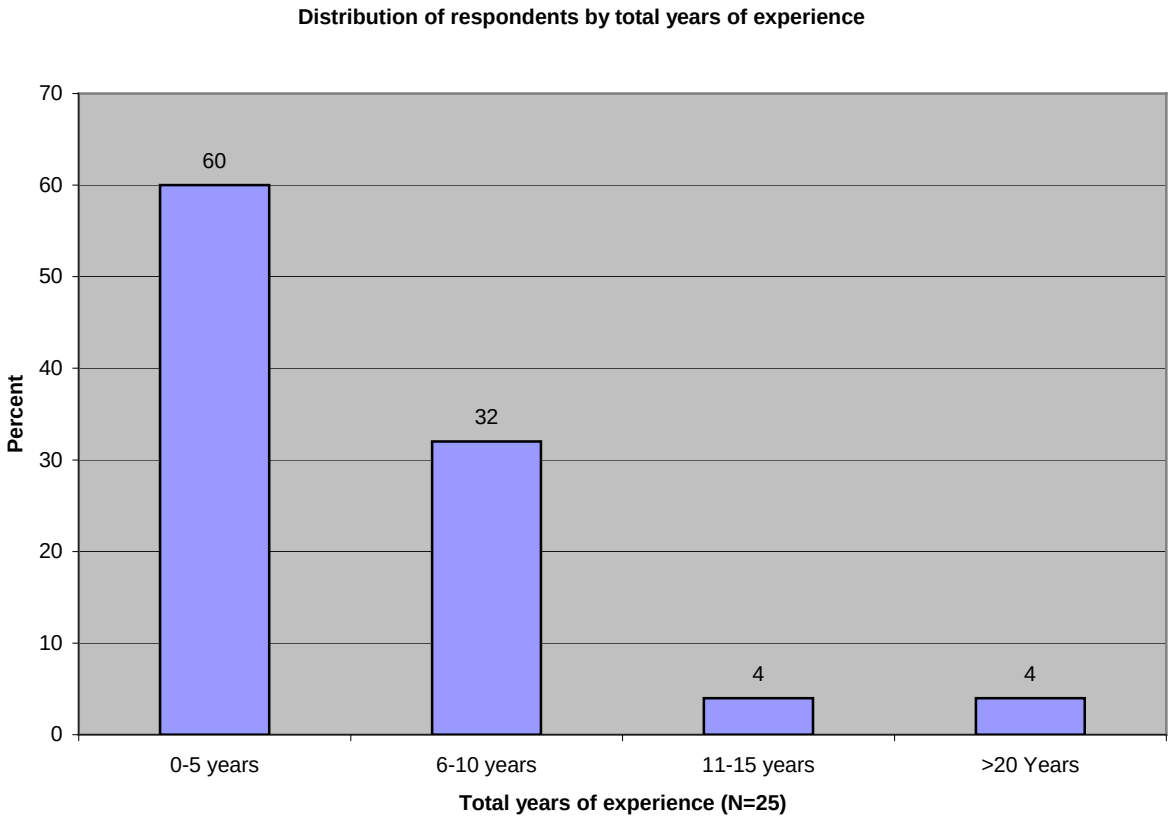

Figure 3.5 Bar graph illustrating the surgical registrars total years of clinical experience

Sixty percent (n=15) of the surgical registrars indicated that their total years of experience (i.e., clinical experience post internship) were between 0 and 5 years, while thirty two percent (n=8) reported their experience to be between 6 and 10 years. The remaining eight (8%) was divided equally between the last 2 categories, which were 16-20 and greater than 20 years of total experience.

3.2 Knowledge levels of surgical registrars regarding

- **Emergency planning and the provision of emergency equipment, and**
- **Appropriate training opportunities and the testing of plans via periodic drills and exercises.**

14 questions were directed towards assessing the knowledge levels of surgical registrars regarding hospital disaster preparedness in terms of the following preparedness activities:

- Emergency planning and the provision of emergency equipment, and
- Appropriate training opportunities and the testing of plans via periodic drills and exercises.

Each correct answer was scored 1. Incorrect answers were scored zero. Thus the maximum score obtainable for the knowledge component of the questionnaire was 14.

A rating scale was used to categorise the surgical registrar's level of knowledge. Surgical registrars who obtained score scores of 10 and above out of 14, were considered to have an excellent level of knowledge regarding hospital disaster preparedness. Respondents that achieved scores of 8 and 9 out of a total of 14 were categorised as having good and very good levels of knowledge pertaining to hospital disaster preparedness respectively. Scores of 7 and below were indicative of a poor level of knowledge of hospital disaster preparedness.

Table 3.2 Summary Statistics for the knowledge section in terms of the demographic data

	Frequency	Percentage	Mean	Minimum	Maximum
Knowledge Score	25		10.64	5	13
Males	20	80%	10.55	5	13
Females	5	20%	11.00	10	13
South African Training	19	76%	10.47	5	13
Internationally Trained	6	23%	11.17	7	13
Urban internship	21	84%	10.43	5	13
Rural internship	4	16%	11.75	11	13
1 year	12	48%	10.42	5	13
2 years	9	36%	11.22	7	13
3 years	2	8%	11	11	11
4 years	2	8%	9	7	11
0-5 years experience	15	60%	10.67	5	13
6-10 years experience	8	32%	11.5	10	13
11-15 years experience	1	8%	7	7	7
>20 Years experience	1	8%	7	7	7

Table 3.2, above indicates that female surgical registrars (n=5) achieved a mean score of 11.00, which is slightly higher than their male counterparts (n=20) who obtained an average score of 10.55 in the knowledge component of the questionnaire.

The minimum score, of 10 obtained by the female respondents in the knowledge section of the study were higher than those achieved by the males, whose minimum score was equal to 5. The maximum score obtained for both the male and female respondents was 13.

Both the surgical registrars who completed their undergraduate medical training internationally and surgical registrars with local undergraduate medical training achieved a

mean score greater than 10.00, with the former scoring 11.17 and the latter with a mean score of 10.47.

Like the female surgical registrars, those surgical registrars who completed their undergraduate medical training abroad, had a higher minimum score (7) in comparison to their South African trained peers. A maximum score of 13 was present for both of the above-mentioned groups.

Surgical registrars who completed their internship in a rural area achieved a higher mean score, of 11.75 (n=21) in comparison to their peers who completed their internship in an urban area and who obtained a mean score of 10.43 in the knowledge section. In addition, the minimum score (min=11; n=4) achieved by respondents who completed their internship in a rural area was substantially higher than those achieved by surgical registrars who completed their internship in an urban area. The maximum score was equal to 13 for both categories of surgical registrars.

Both 2nd and 3rd year's surgical registrars obtained average scores of 11.22 and 11 respectively. The mean score achieved by respondents who were in their first year of the surgical registrar programme was 10.42 and was higher than the average score calculated for 4th year surgical registrars.

Surgical registrars who had between 6-10 years clinical experience scored the highest mean (11.5) in the knowledge component of the questionnaire, while those respondents in the 0-5 year clinical experience category achieved an average score of 10.67. Eleven and

greater years of clinical experience achieved the lowest average across all demographic data in the knowledge component of the questionnaire.

Table 3.3, reflects all 14 questions in the questionnaire that aimed at assessing the knowledge level of surgical registrars concerning hospital disaster preparedness. Further, the table reflects the percentage of respondents that answered with a “yes’, “no” or “don’t know” response for each of the questions.

Table 3.3 Questions that reflect the knowledge component in the questionnaire and a summary of their responses (percentages) (* Only main coded responses given)

Q		Yes (%)	No (%)	Don't Know (%)
B1	I am aware of a hospital disaster preparedness plan in my hospital.	48%	52%	
B2	I have read the hospital disaster preparedness plan.	8%	92%	
B3	*The critical preparedness activities that need to be addressed in hospital disaster preparedness plan are Communication …… Health and medical…… Resource management ……. Evacuation Response and recovery operations ……	 4% 12% 52% 12%		
B4	The hospital disaster preparedness plan should account for: Internal and External Disasters	 96%		
B5	All departments (medical and non-medical) should be involved in the planning phase.	92%	8%	
6b	*Emergency planning is important for: Protection of patients…… Protection of staff and patients…….	 4% 8%		
7	The hospital disaster preparedness plan should be regularly reviewed and monitored.	92%	8%	
8b	*Review and monitoring is a useful process to Improve on plan…… Update details ……... No response……	 24% 20%		 40%
9	The hospital should designate a command and control area.	88%	4%	8%
10	*The function of the command and control centre is for Planning……. Operational ……	 40% 16%		
11b	*The command and control centre is effective since it allows for Greater co-ordination…… Communication…….	 20% 4%		
12	The hospital staff should have access to additional medical and pharmaceutical supplies in the event of a disaster situation.	88%		12%
14a	The hospital would require other resources (apart from medical and pharmaceutical supplies) in the event of a disaster.	88%		12%
14b	*Examples of other resources provided Food……... Linen/beds……. Staff ……...	 20% 32% 32%		
15	The hospital disaster preparedness plan should include education and training component.	100%		

It is important to note that while 48% (n=12) indicated that they were aware of the hospital disaster preparedness plan, only 8% (n=2) had actually read the hospital disaster preparedness plan.

More than half of the respondents (52%, n=13) considered resource management to be a critical preparedness activity that should be addressed in the hospital disaster preparedness plan. Critical preparedness activities such as ‘health and medical’ and ‘response and recovery’ were indicated by 12% (n=3) of the sample population respectively. Other critical preparedness activities such as vulnerability assessment, planning, communication, alerting, command and control etc., were all identified by less than 10% of the respondents.

The majority (96%, n=24) of the surgical registrars were aware that a hospital disaster preparedness plan should account for both internal and external disaster events. Further, a very high percentage of surgical registrars (92%) were aware that both the medical and non-medical categories of staff should be involved in the planning phase of the hospital disaster preparedness plan.

Only 4% of the respondents were aware that emergency planning allowed for the protection of patients. Further 8% were aware it allowed for both the protection of patients as well as the staff. More than three quarters of sample population (84%, n=22) presented responses that were either categorised as being “other” or “non-valid details”.

It was encouraging to note that 92% of the surgical registrars were aware that the hospital disaster preparedness plan should be regularly reviewed and monitored. Surgical registrars considered the review and monitoring process to be useful since it allowed for the hospital

disaster plan to be updated with current staff details (20%, n=5). Further, this process provided an opportunity for the plan to be improved on (24%, n=6). Forty percent of the respondents did not provide a response to this question.

88% percent of the surgical registrars were aware that a hospital should designate a command and control centre. The two most popular responses provided by the surgical registrars with regard to the function of the command and control centre included planning (40%, n=10) and operational (16%, n=4). Respondents that reported both planning and operational functions accounted for 4%, while surgical registrars that indicated both operational and logistics were also equal to four percent of the sample population. Only one participant indicated planning, operational and logistics as functions of a command and control centre.

The study sample considered the command and control centre to be effective as it allowed for greater co-ordination (20%, n=5) and facilitated better communication (4%, n=1). Responses that were coded as “other” was equal to 36% (n=9) of the sample population. A further 36% (n=9) of the surgical registrars failed to provide a response. The remaining 4% of the sample population were coded as being greater co-ordination and other.

Eighty-eight percent (n=22) of surgical registrars were aware that the hospital staff should have access to additional medical and pharmaceutical supplies in the event of a disaster. Further, it was encouraging to note that the same percentage of surgical registrars were aware that in addition to medical and pharmaceutical supplies other resources are required to effectively and efficiently manage a disaster situation.

With respect to the examples of additional resources that are required during a disaster situation, staff and linen/beds were indicated by 32% (n=8) of the surgical registrars respectively. Twenty percent (n=5) of the respondents identified food as an additional resource. Water, clothing, transport and the media were all indicated as required resources by 8% (n=2) of the sample population respectively. Stationery and shelter were identified by 4% (n=1) of the surgical registrars respectively. A mortuary and waste management were presented as examples of additional resources as well, with both the former and latter being identified by 4% of the respondents respectively. Responses that were coded as other, included examples such as telephones, counselling etc, accounted for the remaining 60% (n=15) of the responses obtained.

All surgical registrars were aware that education and training should be included as part of the hospital disaster preparedness plan.

All the above mentioned data was used to categorize the surgical registrar's knowledge of hospital disaster preparedness, in terms of emergency planning and the provision of emergency supplies and equipment, into one of the four categories:

- Poor knowledge
- Good knowledge
- Very good knowledge
- Excellent knowledge

Therefore the percentage of surgical registrars that were classified as having poor, good, very good and excellent knowledge scores pertaining to hospital disaster preparedness is described in the pie-graph below.

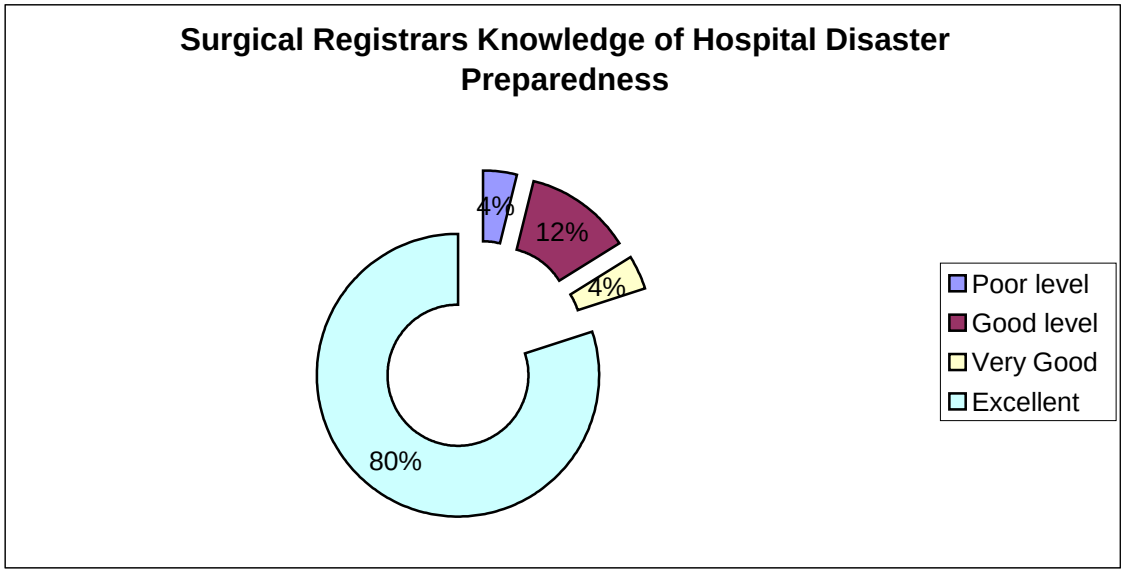

Figure 3.6 Doughnut chart depicting the percentage of surgical registrars with respect to the different categories of knowledge

It was encouraging to note that 80% of the surgical registrars that participated in the study were categorised as having excellent knowledge of hospital disaster preparedness. Average knowledge levels were present in 12% of the study sample, while only 4% scored poorly on the knowledge component of the questionnaire. Surgical registrars that were identified as having very good knowledge accounted for 4% of the study sample in the study.

Table 3.4 Knowledge of disaster preparedness by gender

Gender	Categories of knowledge	Frequency	Percent
Male	Poor Level of Knowledge	1	5.0
	Good level of Knowledge	3	15.0
	Very Good level of Knowledge	1	5.0
	Excellent level of Knowledge	15	75.0
	Total	20	100.0
Female	Excellent level of Knowledge	5	100.0

With respect to the gender distribution of the different categories of knowledge levels Table 3.4 indicates that all female respondents in the study (n=5) were categorised as having excellent knowledge concerning hospital disaster preparedness. Seventy-five percent of the male surgical registrars however were classified as having excellent knowledge. Only five percent (n=1) of the male surgical registrars were categorised as having poor and very good knowledge levels respectively. Three times (15%) as many male surgical registrars were identified as having a good level of knowledge.

According to Table 3.5, eighty three percent (n=5) of surgical registrars that had undergone their undergraduate medical training overseas were categorised as having an excellent level of knowledge, while 78.9% (n=15) of the surgical registrars trained in South Africa were categorised as having an excellent level of knowledge. Less than 29% of both the South African and internationally trained surgical registrars combined were regarded as having a good knowledge of hospital disaster preparedness. A very good and poor level of knowledge is indicated in the Table below by only 5.3% of the study sample respectively

Table 3.5 Knowledge of disaster preparedness by area of training

Location where undergraduate medical training	Categories of knowledge	Frequency	Percent
SA	Poor Level of Knowledge	1	5.3
	Good level of Knowledge	2	10.5
	Very Good level of Knowledge	1	5.3
	Excellent level of Knowledge	15	78.9
	Total	19	100.0
International	Good level of Knowledge	1	16.7
	Excellent level of Knowledge	5	83.3
	Total	6	100.0

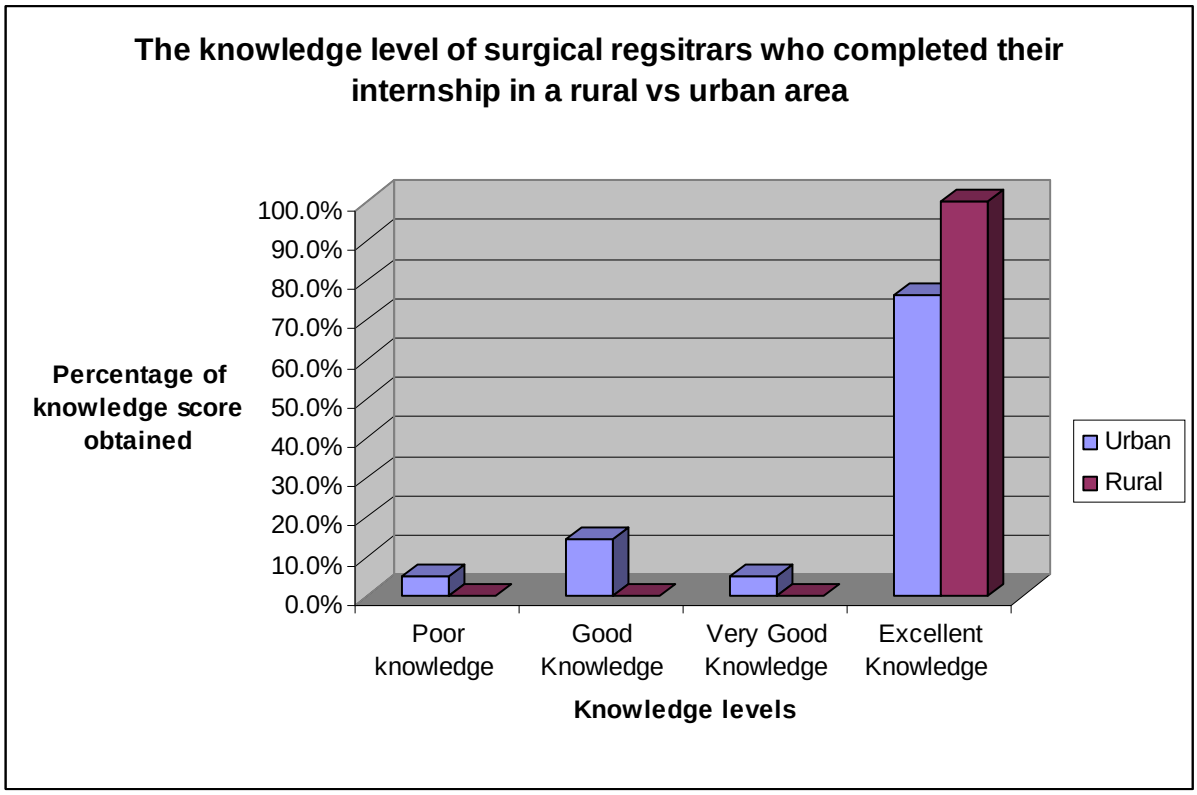

Figure 3.6 Bar Graph illustrating the knowledge levels of surgical registrars who completed their internship in a rural versus urban area

The figure above illustrates that 100% (n=4) of the surgical registrars who completed their internship in a rural area were categorised as having an excellent level of knowledge with regards to hospital disaster preparedness. In comparison, only 76.2% (n=16) of the surgical registrars who completed their internship in an urban area had achieved scores that were consistent with having as excellent level of knowledge. The remaining 24% were divided amongst the following categories: - poor knowledge (4.8%, n=1), good knowledge (14.3%, n=3) and very good knowledge (4.8%, n=1).

Table 3.6 Knowledge of disaster preparedness by years of experience in surgical programme

		Years in the surgical registrar programme			
		1 Year	**2 Years**	**3 Years**	**4 Years**
Knowledge Category	Poor Level of Knowledge	8.3%(n=1)	0	0	0
	Good level of Knowledge	8.3%(n=1)	11%(n=1)	0	50%(n=1)
	Very Good level of Knowledge	8.3%(n=1)	0	0	0
	Excellent level of Knowledge	75%(n=9)	88.9%(n=8)	100%(n=2)	50%(n=1)
Total		12	9	2	2

It was important to note that 75% (n=9) of surgical registrars in year one of the surgical registrar programme were categorised as having an excellent level of knowledge pertaining to hospital disaster preparedness. The remaining 25% (n=3) of surgical registrars in year one were equally divided among the poor, good and very good categories of knowledge.

The majority (88.9%) of surgical registrars in year 2 were categorised as having excellent level of knowledge pertaining to hospital disaster preparedness. The remaining 11% of the surgical registrars in year 2 were classified as having a good level of knowledge concerning hospital disaster preparedness.

With respect to the surgical registrars in year 3, 100% (n=2) had an excellent level of knowledge, while 50% (n=1) of the surgical registrars in year 4 achieved the same.

Table 3.7 Knowledge of disaster preparedness by total years of experience

Categories of knowledge	Total years of experience			
	0-5 years	6-10 years	11-15 years	>20 Years
Poor Level of Knowledge	6.7%(n=1)	0	0	0
Good level of Knowledge	6.7%(n=1)	0	100%(n=1)	100%(n=1)
Very Good level of Knowledge	6.7%(n=1)	0	0	0
Excellent level of Knowledge	80%(n=12)	100%(n=8)	0	0

The majority of respondents who have between 0-5 years of clinical experience (80%) were categorised as having an excellent level of knowledge with regards to hospital disaster preparedness. However, all surgical registrars with 6-10 years of clinical experience achieved scores that were consistent with an excellent level of knowledge.

Surgical registrars with 11 years or greater clinical experience were categorised as having a good level of knowledge concerning hospital disaster preparedness.

3.3 Attitudes of surgical registrars regarding hospital disaster preparedness

5 questions in the questionnaire were directed towards assessing the attitudes of surgical registrars regarding hospital disaster preparedness in terms of the following preparedness activities:

- Emergency planning and the provision of emergency equipment, and
- Appropriate training opportunities and the testing of plans via periodic drills and exercises.

The maximum score obtainable for the attitude component of the questionnaire was 5.

A rating scale was used to categorise the surgical registrar's attitude regarding hospital disaster preparedness. Surgical registrars that answered 4 or 5 of the attitude questions with a 'yes' were categorised as having a positive attitude towards hospital disaster preparedness. Respondents that answered 1 or 2 of the attitude questions with a 'yes' were categorised as having a negative attitude towards hospital disaster preparedness. Scores of 3 were indicative of a neutral view towards hospital disaster preparedness.

Table 3.8 Summary statistics for the attitude section in terms of the demographic data

	N		Mean	Minimum	Maximum
	Frequency	Percentage			
Attitude	25		3.36	2	4
Males	20	80%	3.35	2	4
Females	5	20%	3.40	2	4
South African Training	19	76%	3.32	2	4
International Training	6	23%	3.50	2	4
Urban internship	21	84%	3.33	2	4
Rural internship	4	16%	3.5	3	4
1 year	12	48%	3.17	2	4
2 years	9	36%	3.78	3	4
3 years	2	8%	2.5	2	3
4 years	2	8%	3.5	3	4
0-5 years experience	15	60%	3.13	2	4
6-10 years experience	8	32%	3.63	3	4
11-15 years experience	1	8	4	4	4
>20 Years experience	1	8%	4	4	4

With respect to attitudes of surgical registrars, male surgical registrars (n=20) had a mean score of 3.35 while female surgical registrars (n=5) had a slightly higher average score at 3.40. A minimum score of 2 and a maximum score of 4 was present for both the male and female respondents.

Surgical registrars that obtained their undergraduate medical training in South Africa (n=19) obtained a mean score of 3.32. Their internationally trained counterparts (n=6) had a higher mean score of 3.50 for the section that pertains to attitudes. A minimum score of 2 and a maximum score of 4 was present for both the South African trained and internationally trained surgical registrars.

Surgical registrars who completed their internship in a rural area achieved a higher mean score, of 3.5 (n=4) in comparison to their peers who completed their internship in an urban area and who obtained a mean score of 3.3 in the attitude section. In addition, the minimum score (min=3) achieved by respondents who completed their internship in a rural area was higher than those achieved by surgical registrars who completed their internship in an urban area (min=3). The maximum score was equal to 4 for both categories of surgical registrars.

Both 2nd and 4th year's surgical registrars obtained average scores of 3.78 and 3.5 respectively. The mean score achieved by respondents who were in their first year of the surgical registrar programme was 3.17 and was higher than the average score calculated for 3rd year surgical registrars.

Surgical registrars whom had 11 years and greater clinical experience scored the highest mean score of 4, which is equivalent to the maximum score in the attitude component of the questionnaire, while those respondents in the 6-10 year clinical experience category achieved an average score of 3.63. Respondents in the 0-5 years of clinical experience

achieved the lowest average score of 3.13 in comparison to the other categories of clinical experience.

Table 3.9, below reflects all 5 questions in the questionnaire that aimed at assessing the attitudes of surgical registrars concerning hospital disaster preparedness. Further, the table reflects the total number of respondents that answered with a “yes’, “no” or “don’t know” response for each of the questions stated in the table.

Table 3.9 Questions that reflect the attitude component in the questionnaire and a summary of their responses (percentages)

Q	Question	Yes	No	Don’t Know
6	I consider emergency planning to be important.	100%	-	-
8	I think that the review and monitoring process is useful.	92%	8%	-
11	I think having the command and control centre is effective during a disaster situation.	88%	12%	
13	I believe that the hospital has sufficient staff/personnel to effectively manage a disaster situation.	48%	48%	4%
16	I consider hospital disaster preparedness training to be adequate.	8%	88%	4%

It was very encouraging to note that all (i.e., 100%) of the surgical registrars considered the process of emergency planning to be important.

The review and monitoring process was considered to be useful by 92% of the surgical registrars sampled in the study. Eight percent however considered the process to be ineffective.

The data reflects that a total of 88% of the surgical registrars were of the opinion that having a command and control was an effective mechanism for managing a disaster situation, while the remaining 12% of the respondents did not view the command and control centre to be an effective disaster management intervention.

It was interesting to note that the surgical registrars were equally divided (i.e., 48%) in their opinion of whether or not the current hospital staffs was sufficient to effectively deal with a disaster situation. The remaining 4% indicated that they did not know.

The adequacy of the hospital disaster preparedness training programme was also explored; in the questionnaire a total of 88% indicated that they considered their hospital disaster training programme to be inadequate.

All the above mentioned data was used to categorize the surgical registrar's attitudes concerning hospital disaster preparedness into one of the three categories:

- Positive attitudes
- Neutral attitudes
- Negative attitudes

Therefore the percentage of surgical registrars that were classified as having positive, neutral and negative attitudes pertaining to hospital disaster preparedness is described in the graph below.

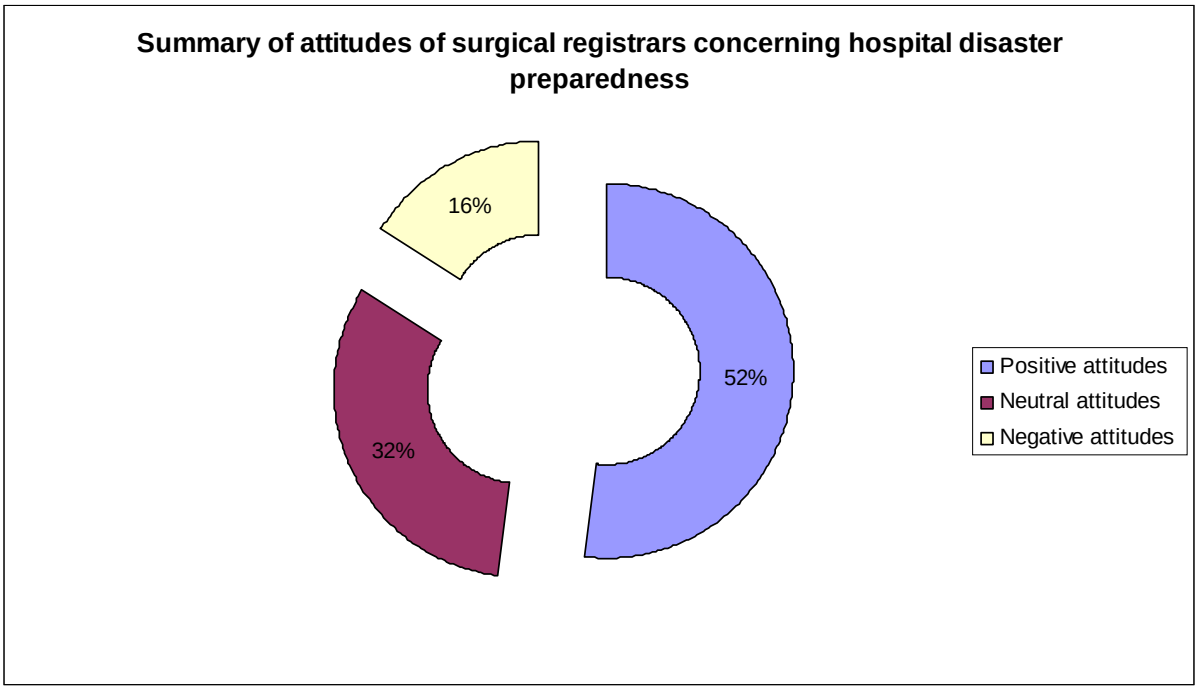

Figure 3.7 Doughnut graph depicting the percentage of surgical registrars that were categorised as having positive, neutral or negative attitudes

From the above, it is encouraging to note that more than half (i.e., 52%) of surgical registrars sampled have positive attitudes towards hospital disaster preparedness. Neutral attitudes regarding hospital disaster preparedness were prevalent among thirty-two percent (32%) of the sample population. The remaining sixteen percent have been described as having negative views concerning hospital disaster preparedness.

While the frequency distribution of all the demographic information relating to attitudes is important, only those that would be referred to the discussion chapter have been presented below.

With respect to the gender distribution among the attitude categories given above, Table 3.10 (please refer to annexure) below indicates that 15% (n=3) of males and 20 % (n=1) of the female surgical registrar sample held negative views about hospital disaster preparedness.

Table 3.10 (please refer to annexure) further revealed that a higher percentage of females (i.e., 60%) had positive attitudes to hospital disaster preparedness than their male counterparts, where 50% reported positive views about hospital disaster preparedness.

In addition, more male (35%) than female (20%) surgical registrars reported neutral views on hospital disaster preparedness.

According to Table 3.11 less than 35% of the surgical registrars who received their undergraduate medical training in South Africa and internationally combined, had negative views about the value of hospital disaster preparedness. Sixty-six percent (n=4) of surgical registrars who received their undergraduate medical training internationally had positive views about hospital disaster preparedness, in comparison to the less than half (47%) of the South African trained surgical registrars. A larger percentage (36%, n=7) of South African versus internationally trained surgical registrars (16%) was neutral in respect to hospital disaster preparedness.

Table 3.11 Attitudes to disaster preparedness by area of training

		Frequency	Percent
SA	Negative views about hospital disaster preparedness	3	15.8
	Neutral views about hospital disaster preparedness	7	36.8
	Positive views about hospital disaster preparedness	9	47.4
	Total	19	100.0
International	Negative views about hospital disaster preparedness	1	16.7
	Neutral views about hospital disaster preparedness	1	16.7
	Positive views about hospital disaster preparedness	4	66.7
	Total	6	100.0

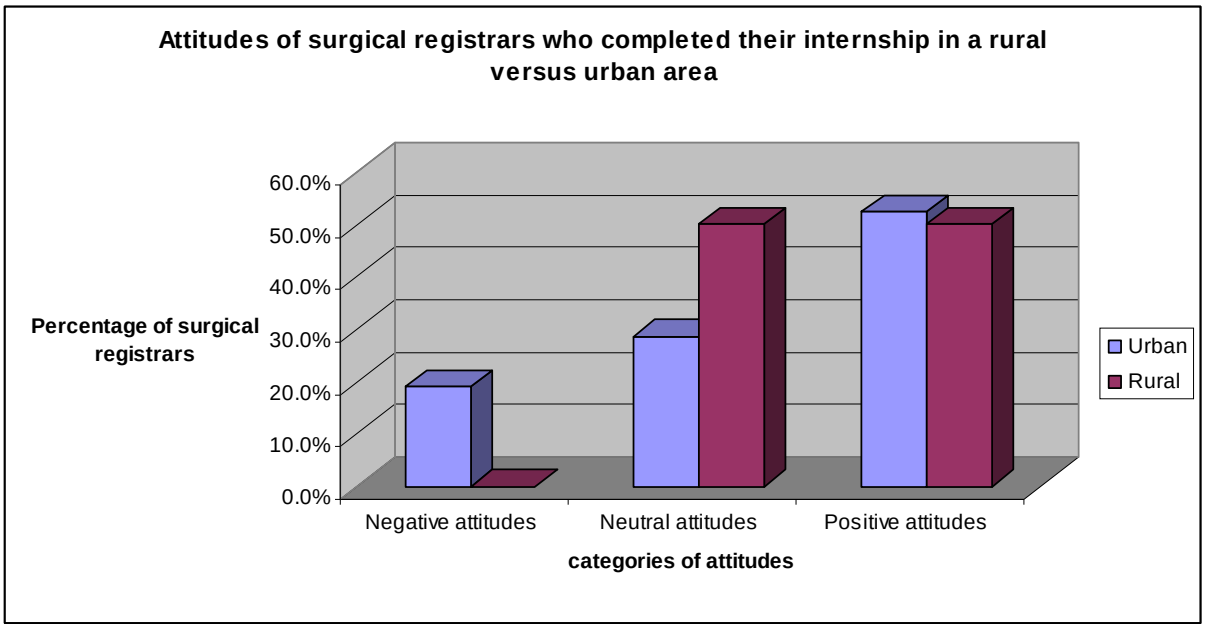

Figure 3.8 Bar Graph illustrating the attitudes of surgical registrars who completed their internship in a rural versus urban area

Figure 3.8 illustrates that 19% (n=4) of the surgical registrars who completed their internship in an urban area were categorised as having a negative attitude with regards to

hospital disaster preparedness. In comparison, none of the surgical registrars who completed their internship in a rural area had achieved scores that were consistent with a negative attitude. Instead surgical registrars who completed their internship in a rural area were equally divided (50%) between the neutral and positive attitude categories. Twenty-eight percent of surgical registrars who completed their internship in an urban area were categorised as having a neutral attitude towards hospital disaster preparedness, while 52% were regarded as having a positive attitude.

Table 3.12 Attitudes to disaster preparedness by years of experience in surgical programme.

Categories of attitudes	Years in the surgical registrar programme			
	1 Year	2 Years	3 Years	4 Years
Negative views about hospital disaster preparedness	25%(3)	0	50%(1)	0
Neutral views about hospital disaster preparedness	33.3%(4)	22.2%(2)	50%(1)	50%(1)
Postive views about hospital disaster preparedness	41.7%(5)	77.8%(7)	0	50%(1)

41.7% (n=5) of surgical registrars in year one of the surgical registrar programme were categorised as having a positive attitude about hospital disaster preparedness, while 33% were neutral. The remaining 25% (n=3) of surgical registrars in year one were categorised as having negative views.

The majority (77.8%) of surgical registrars in year 2 were categorised as having positive views about hospital disaster preparedness. The remaining 22% of the surgical registrars in year 2 were classified as being neutral.

With respect to the surgical registrars in year 3, they were equally divided (50%) between having negative and neutral views about hospital disaster preparedness. Surgical registrars in year 4 however, were equally divided between having neutral and positive views concerning hospital disaster preparedness.

Table 3.13 Attitudes to disaster preparedness by total years of experience.

Categories of attitudes	Total years of experience			
	0-5 years	6-10 years	11-15 years	>20 Years
Negative views about hospital disaster preparedness	26.7%(n=4)	0	0	0
Neutral views about hospital disaster preparedness	33.3%(n=5)	37.5%(n=3)	0	0
Positive views about hospital disaster preparedness	40%(n=6)	62.5%(n=5)	100%(n=1)	100%(n=1)

40% (n=6) of surgical registrars, who had between 0-5 years of clinical experience, were categorised as having positive views about hospital disaster preparedness. Negative views however accounted for 26.7% (n=4), while surgical registrars who were neutral about hospital disaster preparedness were equal to 33.3%.

The majority of surgical registrars who had between 6-10 years of clinical experience (62%, n=5) were positive about hospital disaster preparedness, while the remaining 37.5% (n=3) were neutral.

Surgical registrars with 11 and greater years of clinical experience were all categorised as having positive views concerning hospital disaster preparedness.

3.4 Practices of surgical registrars concerning hospital disaster preparedness

4 questions in the questionnaire were directed at assessing the practices of surgical registrars regarding hospital disaster preparedness in terms of the following preparedness activities:

- Emergency planning and the provision of emergency equipment, and
- Appropriate training opportunities and the testing of plans via periodic drills and exercises.

The maximum score obtainable for the practice component of the questionnaire is 4.

A rating scale was used to categorise the surgical registrar's practices regarding hospital disaster preparedness. Surgical registrars that answered 3 or 4 of the practice questions with a 'yes' were categorised as implementing good practices in terms of hospital disaster preparedness. Respondents that answered 2 of the practice questions with a 'yes' were categorised as implementing average practices while scores of 2 and less were indicative of poor practices towards hospital disaster preparedness.

Table 3.14 Summary Statistics for the practice section in terms of the demographic data

	N		Mean	Minimum	Maximum
	Frequency	Percentage			
Practice	25		.72	0	3
Male	20	80%	.75	0	3
Female	5	20%	.60	0	3
South African Training	19	76%	.42	0	1
International Training	6	23%	1.67	0	3
Urban internship	21	84%	0.71	0	3
Rural internship	4	16%	0.75	0	1
1 year	12	48%	0.67	0	2
2 years	9	36%	1.11	0	3
3 years	2	8%	0	0	0
4 years	2	8%	0	0	0
0-5 years experience	15	60%	0.6	0	2
6-10 years experience	8	32%	1	0	3
11-15 years experience	1	8	0	0	0
>20 Years experience	1	8%	1	1	1

Male surgical registrars (n=20) obtained a mean score of .72, whereas female surgical registrars (n=5) achieved a lower mean score of .60. The minimum and maximum scores for the male and female surgical registrars were 0 and 3 respectively.

Surgical registrars who reported to have their undergraduate medical training abroad scored significantly higher mean scores (1.67) in comparison to the surgical registrars who were trained in South Africa who had a mean score of .42.

Maximum scores of 1 and 3 were achieved by South African and internationally trained surgical registrars respectively.

Surgical registrars who completed their internship in a rural area achieved a slightly higher mean score, of 0, 75 (n=4) in comparison to their peers who completed their internship in an urban area and who obtained a mean score of 0.71 in the section pertaining to practices of hospital disaster preparedness. In addition, the minimum score (min=0) achieved by respondents who completed their internship in a rural area was equal to those achieved by surgical registrars who completed their internship in an urban area. The maximum score was equal to 3 and 1 for urban and rural categories respectively.

Both 1st and 2nd year's surgical registrars obtained average scores of 0.67 and 1.11 respectively. The mean score achieved by respondents who were in their third and fourth year of the surgical registrar programme was 0.

Surgical registrars whose clinical experience was between 0-5 years and 6-10 years achieved a mean score of 0.6 and 1 respectively. The latter mean score was equivalent to the average obtained by respondents with greater than 20 years experience. Participants whose experience spanned between 11-15 years however obtained a mean score of 0.

Table 3.15 Questions that reflect the practice component in the questionnaire and a summary of their responses (percentages)

Q No.	Question	Yes	No	*Not applicable or No response (NR)
1	a) I was orientated to the hospital disaster preparedness plan on my arrival (i.e., within the first 3 days).	-	100%	
2	a) Regular training and periodic drills regarding disaster preparedness take place at my hospital.	12%	84%	
2	c) External agencies are involved in the training or drill activities.		12%	*88%
4	I think that the surgical registrar programme has adequately prepared me in terms of managing different disasters within a hospital context.	48%	44%	8% (NR)
6	In the event of a major disaster, I would be confident in your role as a surgical registrar.	88%	8%	4% (NR)

Table 3.15 describes the surgical registrar's responses to the questions that seek to assess the current practices of hospital disaster preparedness across the identified tertiary hospitals in Gauteng.

From the above table, it is evident that all surgical registrars indicated that they were not orientated to the hospital disaster preparedness plan on their arrival at their respective tertiary hospitals.

With respect to regular training and periodic drills regarding hospital disaster preparedness eighty four percent (n=21) of the surgical registrars sampled reported this

preparedness activity did not occur at their respective hospitals. In addition, 12% (n=3) reported that these training and periodic drills did not include external agencies.

Despite 44% percent (n=11) of the surgical registrars reporting that the surgical registrar programme was inadequate in terms of their preparation to manage different disaster situations, eighty-eight percent (n=22) indicated that they were confident in their role as a surgical registrar during a disaster situation. Less than 10% percent (i.e., 8%) reported that they were not confident about their roles.

The data from table 3.15 was used to describe the practices of surgical registrars concerning hospital disaster preparedness, into the following three (3) categories:

- Good practices
- Average practices
- Poor practices

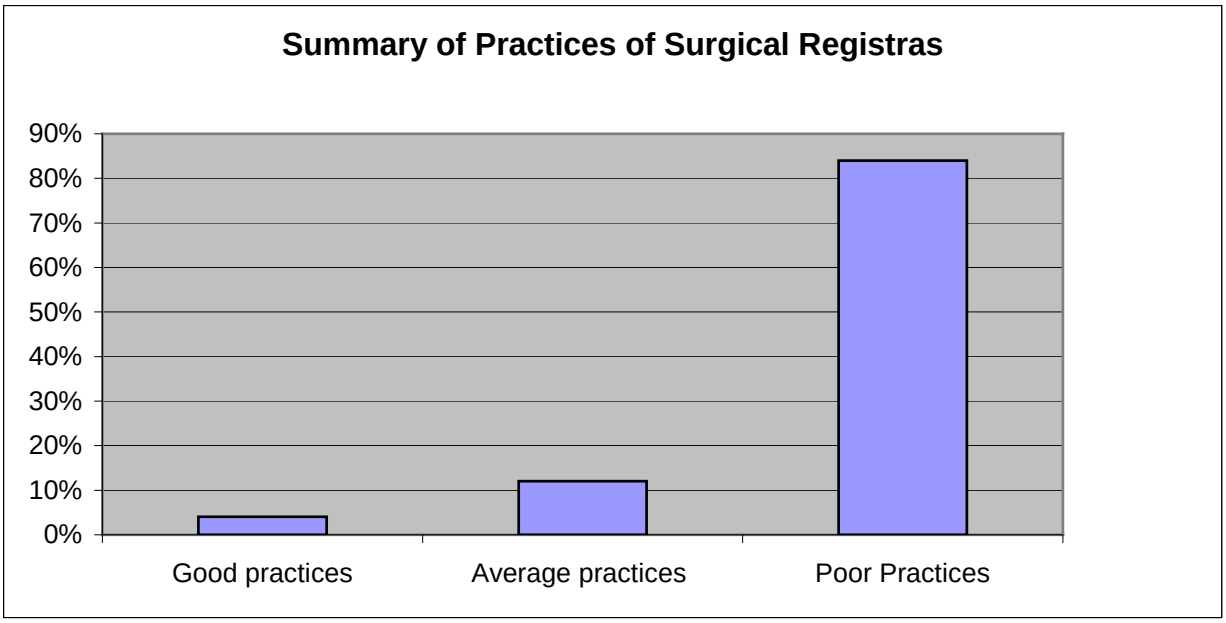

Figure 3.8 Bar graph depicting the percentage of surgical registrars that have been described as having poor, average and good practices relating to hospital disaster preparedness

The bar graph illustrates that a large percentage (i.e., 84%) of the surgical registrars reported poor practices concerning hospital disaster preparedness, while good practices however, were only indicated by 4% of the surgical registrars. The remaining 12% revealed that their hospital disaster preparedness activities were average.

With respect the gender distribution of the categories of practice outlined above, Table 3.16 (please refer to annexure) indicates that poor hospital disaster preparedness practices were implemented by 80% of males (n=16) and 100% of females (n=5) respectively. It was disappointing to note that only 5% (n=1) of the male surgical registrars reported that good practices relating to hospital disaster preparedness were being implemented at tertiary level of hospital care.

All surgical registrars who received their medical undergraduate training locally (n=19) were categorised as being poor in terms of their hospital disaster preparedness practices. In contrast, only thirty-three percent of internationally trained surgical registrars (n=2) reported poor hospital disaster preparedness practices while 50% reported average practices. Good practices however, accounted for the least percentage of 16%.

Table 3.17 Practices of disaster preparedness by area of training

		Frequency	Percent
SA	Poor practices are being Implemented	19	100.0
International	Poor practices are being Implemented	2	33.3
	Average practices are being Implemented	3	50.0
	Good practices are being Implemented	1	16.7
	Total	6	100.0

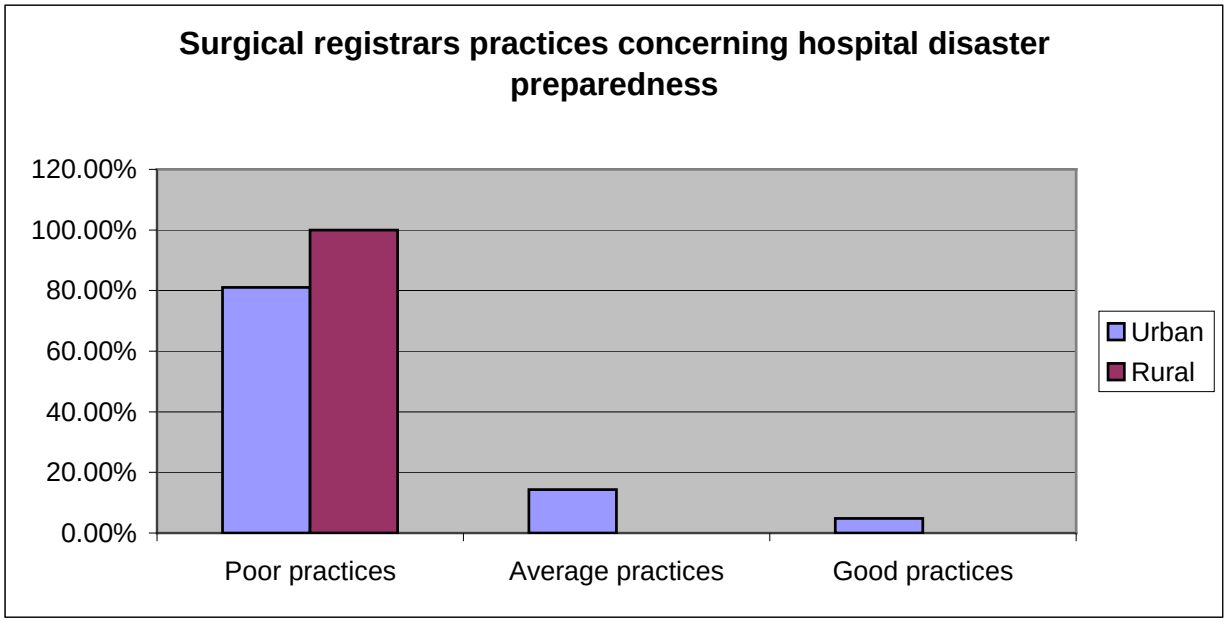

Figure 3.9 Bar Graph illustrating the practices of surgical registrars who completed their internship in a rural versus urban area

Figure 3.9 illustrates that a small percentage 4.8% of the surgical registrars who completed their internship in an urban area were categorised as having good practices with regards to hospital disaster preparedness. In comparison, none of the surgical registrars who completed their internship in a rural area had achieved scores that were consistent with good practices. Instead all surgical registrars who completed their internship in a rural area (100%) were categorised as implementing poor hospital disaster preparedness practices. In addition, 81% of surgical registrars who completed their internship in an urban area were categorised as having poor practices.

Table 3.18 Practices of disaster preparedness by years of experience in surgical programme

	Years in the surgical registrar programme			
	1 Year	2 Years	3 Years	4 Years
Poor practices are being implemented	91.7%(11)	66.7%(6)	100%(2)	100%(2)
Average practices are being implemented	8.3%(1)	22.2%(2)	0	0
Good practices are being implemented	0	11.1%(1)	0	0

91.7% (n=11) of surgical registrars in year one of the surgical registrar programme were categorised as implementing poor practices with respect to hospital disaster preparedness, while the remaining 8.3% (n=1) were implementing practices that were considered to be average.

Similarly, the majority (66.7%, n=6) of surgical registrars in year 2 were categorised as implementing poor practices with respect to hospital disaster preparedness. Only 11.1% (n=1) implemented good practices. The remaining 22% of the surgical registrars in year 2 were classified as implementing average practices.

With respect to the surgical registrars in year 3 (n=2) and 4 (n=2) of the surgical registrar programme, they all achieved scores that were consistent with poor practices.

Table 3.19 Practices of disaster preparedness by years of clinical experience

Categories of practices	Total years of experience			
	0-5 years	6-10 years	11-15 years	>20 Years
Poor practices are being implemented	86% (n=13)	75%(n=6)	100%(n=1)	100% (n=1)
Average practices are being implemented	13.3%(n=2)	12.5%(n=1)	0	0
Good practices are being implemented	0	12.5%(n=1)	0	0

The majority of respondents who have between 0 to 5 years of clinical experience (86%, n=13) have been categorised as implementing poor practices with respect to hospital disaster preparedness. The remaining 13.3% have been described as implementing average hospital disaster preparedness practices.

As with the surgical registrars who have between 0-5 years of clinical experience, the majority of respondents with 6-10 years of clinical experience (75%, n=6) were categorised as implementing poor practices. The remaining 25% in this 6-10 year range of clinical experience were equally divided between the average and good categories of practices.

All surgical registrars with 11 and greater years of clinical experience were categorised as implementing poor practices concerning hospital disaster preparedness.

3.5 Correlation between Knowledge, Attitude and Practice Scores

Table 3.20 Table showing the correlation coefficient for the knowledge, attitude and practice scores obtained in this study.

		Knowledge Score	Attitude Score	Practice Score
Knowledge Score	**Correlation**	1	.080	.475(*)
	Sig.		.705	.016
	N	25	25	25
Attitude Score	**Correlation**		1	.230
	Sig.			.269
	N		25	25
Practice Score	**Correlation**			1
	Sig.			
	N			25
* Correlation is significant at the 0.05 level (2-tailed).				

Correlation coefficients, measures the degree of linear relationship between two variables [8.] The correlation coefficient may take on any value between +1 and -1 [8]. The sign tells you the direction of the relationship, either positive or negative [8]. A positive correlation coefficient means that as the value of one variable increases, the value of the other variable increases[8]. A negative correlation coefficient on the other hand indicates that as the value of one variable increases, the other decreases [8.]

The Pearson's correlation coefficient was calculated for the knowledge, attitude and practice scores to establish the relationship between knowledge (K), attitude (A) and practice (P). The 1's on the diagonals indicate where a score is being compared to itself. The N tells you the number of observations (i.e., 25) that was used in calculating the correlation coefficients. The sig. is the p-value, which tells you whether the correlation

coefficient is statistically significant, or not. The highlighted and * cells refer to those results which show statistically significant correlation at the 5% level.

With respect to Table 3.20, the knowledge score shows a statistically significant correlation *(.475) to the practice score. Further, the table reveals it is a positive correlation coefficient.

Table 3.21 however, splits the analysis by gender. Hence a separate correlation matrix exists for both male and female respondents in the study.

Table 3.21 A table showing the correlation coefficient for the knowledge, attitude and practice scores in terms of the gender of the surgical registrars in the study.

Gender			Knowledge Score	Attitude Score	Practice Score
Male	Knowledge Score	Correlation	1	.062	.492(*)
		Sig.		.794	.028
		N		20	20
	Attitude Score	Correlation		1	.136
		Sig.			.568
		N			20
	Practice Score	Correlation			1
		Sig.			
		N			20
Female	Knowledge Score	Correlation	1	.228	.373
		Sig.		.712	.537
		N	5	5	5
	Attitude Score	Correlation		1	.919(*)
		Sig.			.028
		N		5	5
	Practice Score	Correlation			1
		Sig.			
		N			5

With respect to Table 3.21, the knowledge score achieved by the male respondents shows a statistically significant correlation (.492) to the practice score. Further, the table reveals it is a positive correlation coefficient.

Further the table indicates that the attitude score achieved by the female respondents shows a statistically significant correlation (.919) to the practice score. In addition, the direction of this relationship is positive.

It is important to note that a correlation coefficient of r=0.919 indicates a stronger degree of linear relationship than the one of r=0. 492.

Table 3.22 splits the analysis by the location where surgical registrars completed their undergraduate medical training. Hence a separate correlation matrix exists for both respondents that completed their undergraduate medical training internationally and for those who completed their undergraduate medical training in South Africa

Table 3.22 Table showing the correlation coefficient for the knowledge, attitude and practice scores in terms of the location where surgical registrars completed their undergraduate medical training.

			Knowledge Score	Attitude Score	Practice Score
SA	Knowledge Score	Correlation	1	.139	.306
		Sig.		.571	.202
		N	19	19	19
	Attitude Score	Correlation		1	.508(*)
		Sig.			.026
		N		19	19
	Practice Score	Correlation			1
		Sig.			
		N			19
International	Knowledge Score	Correlation	1	.149	.914(*)
		Sig.		.778	.011
		N	6	6	6
	Attitude Score	Correlation		1	-.231
		Sig.			.659
		N		6	6
	Practice Score	Correlation			1
		Sig.			
		N			6
* Correlation is significant at the 0.05 level (2-tailed).					

With respect to Table 3.22, the attitude score achieved by the South African trained respondents shows a statistically significant correlation (.508) to the practice score. Further, the table reveals it is a positive correlation coefficient.

Further, the knowledge score of surgical registrars who completed their undergraduate medical training internationally shows a statistically significant correlation (.914) to the practice score.

Thus this correlation coefficient of r=0.914 indicates a stronger degree of linear relationship than the one of r=0. 508.

CHAPTER 4

4.0 Discussion

4.1 Knowledge levels, attitudes and practices of surgical registrars regarding hospital disaster preparedness across 3 tertiary hospitals in Gauteng.

This chapter seeks to discuss the key results of this study with reference to the literature review presented in chapter 1 of this research report.

The results of the study revealed that 80% of the surgical registrars were categorised as having an excellent level of knowledge pertaining to hospital disaster preparedness, in terms of the following preparedness activities:

1 Emergency planning and the provision of emergency equipment

2 Appropriate training opportunities and the testing of plans via periodic drills and exercises.

Despite a high percentage of the surgical registrars in the study being categorised as having an excellent level of knowledge, it is important to note that 92% of the surgical registrars indicated that they have not read the hospital disaster plan. This percentage is considerably higher than the study conducted by Wong, in which a total of 47% of surgical registrars did not read their hospital disaster plans [7]. This finding was supported by a survey conducted in Geelong (Australia), which reported "…there was limited knowledge of the hospital disaster plan and that disaster preparedness was a low priority, even among key stakeholder departments such as the intensive care unit and the operative services department"[22]. With respect to the South African context, it is possible that hospital

disaster preparedness is not highly prioritised in the health sector due to the competing public health priorities that are prevalent such as Acquired Immune Deficiency Syndrome (AIDS) [23]. As a result the bulk of the financial health budget is allocated towards managing this public health priority, rather than hospital disaster preparedness.

In addition to the above, this high percentage (92%) may also be attributed to amongst other factors, the absence of a hospital disaster plan, the lack of awareness about the importance of hospital disaster preparedness or a shortage of suitably qualified staff to drive disaster preparedness plans within hospitals.

The latter view is supported by the findings of a survey conducted throughout the South East Thames Region, which concluded that "…all staff lack training in clinical and administrative aspects of major incident planning and disaster medicine"[14] In addition, Wong et al., cited the following as limitations to enhancing major incident planning: "lack of funds, lack of a designated full time major incident co-ordinator and a lack of technology"[7]. All of the above mentioned limitations are quite pertinent to a developing country like South Africa.

In an effort to address the skills shortage, the School of Public Health, at the University of Witwatersrand has introduced Disaster Management, for the first time in 2006 as an area of specialization in the Masters of Public Health Programme (Prof S Naidoo, personal communication, March 2006). This initiative would serve to facilitate the growth and development of disaster managers that are equipped with the appropriate knowledge and skills that are needed for the South African context.

With respect to the provision of emergency equipment and supplies, a survey conducted in 2002 revealed that most hospitals in urban areas did not have sufficient medical equipment to manage the large influx of patients associated with a bio terrorist attack[11]. In this study 88% of the surgical registrars were aware that in addition to medical and pharmaceutical resources other resources were needed in the event of a disaster. The examples of other resources that were provided by the surgical registrars include amongst others, food, water, transport and staff.

In support of the latter resource, Loutfy et al has reported that insufficient personnel was the greatest challenge in dealing with the SARS outbreak in Toronto[18]. Therefore it is imperative that staffing issues are considered during the planning phase to ensure that an adequate number of staff is allocated and is on standby to effectively respond to a disaster situation.

In addition to the above-mentioned resources, communication also plays a vital role during a disaster. Despite its importance only 4% of surgical registrars identified communication as a resource that needs consideration in the preparedness plan. According to Murnane and Cooper "realistic expectations for communication systems in disasters are essential for the effective implementation of an emergency operation plan"[16]. A hospitals communication system may improve by the use of business radios, a phone intercom system powered by emergency generators, status boards and runners[19]. The two latter suggestions are basic communication and back –up systems which would work well in the South African context especially since they are highly cost effective strategies of disseminating information from one centre to another in the hospital and tracking the allocation of resources. It was

important that the surgical registrars were able to identify resources other than medical and pharmaceuticals supplies, as this demonstrates their holistic perspective to hospital disaster preparedness, specifically with regards to emergency planning.

In terms of the surgical registrar's knowledge on the different methods of training and testing of hospital disaster plans, the study revealed that 88% of the respondents failed to describe the various methods implemented. This could be possibly due to the lack of training being provided to the surgical registrars. This is substantiated by 88% of the surgical registrars reporting that training and periodic drills relating to hospital disaster preparedness do not occur at their respective hospitals. Similar findings were found in a survey that was conducted in 2002 which reported that "fewer than half of the hospitals have conducted drills or exercises simulating response to a bio terrorist attack"[11].

In support of the above Lavery and Horan have stated "while many institutions/governments agencies has drawn up major incident plans, these are often missing vital elements such as education/training.." [9]. Disaster preparedness training has been shown to be an effective method to increasing the knowledge of registrars on the hospital disaster plan[12] and should therefore not be overlooked when drawing up the hospital disaster plan. The current state of training in the tertiary hospitals surveyed in Gauteng is not favourable especially since "the most important principle of good disaster preparedness planning is that it must include training as a key component" [8].

Whilst it is important to have training programmes in place it is equally important to ensure that the training programmes that are implemented in hospitals should adhere to some form of quality control. The areas that can be reviewed by the quality control board

include amongst others the content of the training sessions, the frequency of the sessions as well as methods to evaluate the training provided. The above would ultimately serve to standardise the preparedness training given to surgical registrars. This in turn would serve to increase their knowledge on hospital disaster preparedness.

4.2 The key mean scores in the knowledge, attitude and practice components of the questionnaire in terms of the demographic data

The highest average score for the knowledge component across all demographic data was equal to 11.75, and was achieved by surgical registrars who completed their internship in a rural area. A rural area by virtue of its geographical location, known staff shortages, lack of technology and resources needs to have an efficient and effective preparedness strategy in place to allow for the running of normal day-to-day activities. This experience of preparedness and alertness that is necessary for the normal day to day activities in a rural context allows for the development of a mindset of preparedness which would then transcend to incorporate disaster events. Thus surgical registrars who completed their internship in a rural area are more knowledgeable about hospital disaster preparedness since their normal day-to-day activities in a rural area are synonymous with some features that are characteristic with a disaster event.

The above finding was unexpected, as the author would have anticipated the average knowledge score to be the highest among surgical registrars who completed their undergraduate medical training abroad. This perception was owing to the fact that South Africa's Disaster Management Act (No 57 0f 2002) is less than 6 years of age[24].

Nonetheless, it was good to note that despite the Act being in its “infancy” stage, the overall knowledge of surgical registrars pertaining to hospital disaster preparedness was excellent.

The recent introduction of the South African Disaster Management Act (No 57 of 2002), however, could be attributed to the lowest average score of 7 in the knowledge component of the questionnaire, which was achieved by surgical registrars with 11 and more years of clinical experience. Thus as a result surgical registrars who had their undergraduate medical training more than 11 years ago were not as knowledgeable as their peers who had graduated recently.

The above finding is significant as it provides motivation for the need for surgical registrars irrespective of their clinical experience to be regularly educated and trained regarding hospital disaster preparedness. The results of this study further indicate that a total of 88 % of the respondents are of the view that the training provided in terms of hospital disaster preparedness is inadequate.

In contrast to the results obtained for the knowledge component of the questionnaire, surgical registrars with greater than 11 years experience had achieved the highest mean score for the attitude section of the questionnaire, which was incidentally equivalent to the maximum score achievable for this particular section, which is 4. This finding could be attributed to the surgical registrar’s greater clinical experience and hence greater exposure to hospital disaster events, which have contributed to them appreciating the value of emergency planning more than their peers who have less clinical experience and hence less exposure to hospital disaster events. Thus as a result of their longer clinical experience,

they are more inclined to have the most positive attitudes towards hospital disaster preparedness. In support of the above, "..attitudes are expected to change as a result of experience"[1]. Therefore the above serves to explain why those registrars who have longer clinical experience have different attitudes to those with less clinical experience.

With respect to the results obtained for the section in the questionnaire pertaining to practices of hospital disaster preparedness, the highest mean score of 1.67 was achieved by surgical registrars that completed their undergraduate medical training internationally. This average score was also considerably higher than the overall mean score for the practice component of the questionnaire, which was equal to .72. Given that hospital disaster preparedness has been in existence in international countries much longer than in South Africa, it is to be expected that medical doctors who have completed their undergraduate medical training abroad would be more acquainted with the practices of hospital disaster preparedness. Further, it is to be expected that disaster preparedness training and practices are more prevalent than in South Africa.

In contrast to the above opinion, the findings of a survey conducted in United States revealed that while the majority of hospitals presented staff with at least some training on how to identify and diagnose disease caused by biological agents, less than half of the hospitals surveyed conducted drills or simulation exercises[11]. Therefore the issue of inadequate preparedness practices appears to be a inherent concern globally and is not restricted to a developing nation like South Africa.

CHAPTER 5

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion of the study

The purpose of this study was to assess the knowledge, attitudes and practices of a sample of surgical registrars regarding hospital disaster preparedness across 3 tertiary hospitals in Gauteng during 2007.

With respect to the knowledge of surgical registrars regarding hospital disaster preparedness, the study revealed that the majority of surgical registrars across 3 tertiary hospitals in Gauteng had an excellent level of knowledge. Despite this positive finding this study advocates the need for regular training sessions to be held, with special attention being paid to surgical registrars with greater than 11 years of clinical experience.

Further, the study revealed more than half of the respondents (i.e., 52%) had positive attitudes towards hospital disaster preparedness across 3 tertiary hospitals in Gauteng during 2007.

84% of the surgical registrars reported poor practices concerning hospital disaster preparedness across 3 tertiary hospitals in Gauteng during 2007.

From the above, it is evident that the practices of surgical registrars are poor in relation to their knowledge and attitude levels concerning hospital disaster preparedness across 3 tertiary hospitals in Gauteng during 2007.

5.2 Recommendations

A dedicated national budget should be allocated to fund hospital disaster preparedness across all hospitals in South Africa so that the staffs is equipped with adequate knowledge, skills and resources to effectively manage a disaster situation.

Hospital disaster preparedness should be a regular feature on the orientation and the induction programme as well as the in service training programmes conducted by the Gauteng Department of Health for its employees, with special attention being drawn to employees who have had more than 11 years of service.

Further, the hospital disaster preparedness training that is given to all staff should adhere to some form of quality control. The areas that can be reviewed under quality control include amongst others the content of the training, the target audience, the frequency of the training as well as the methods to evaluate the training provided.

In terms of the content, a comprehensive overview of the resources needed for hospital disaster preparedness should be presented with areas such as communication, staffing allocations, food etc being given as much attention as the medical and pharmaceutical supplies.

A task team should be set up with the purpose of conducting regular audits across all hospitals in Gauteng to monitor the practices of hospital disaster preparedness.

A similar baseline survey needs to be done with all categories of hospital staff, to determine their knowledge, attitudes and practices concerning hospital disaster preparedness.

A follow-up study should be done with the surgical registrars to determine whether or not there has been any change to the findings of this report after the interventions recommended have been implemented.

Larger sample size should be targeted in the follow up study, so that results obtained can be generalized to the wider surgical registrar population in South Africa.

The orientation and induction of employees in the Gauteng Department of Health should include an introduction to the hospitals disaster preparedness plan.

CHAPTER 6

6.0 References

1. Definitions of terms http://en.wikipedia.org/wiki/ accessed on September 9, 2006

2. Goolsby. C .Introduction to Disaster Planning: the scope and nature of the problem [http://www.emedicine.com/emerg/topic].[cited 2006 Sept 9]. Available from: Wits E-Journal Portal

3. Health Sector Emergency Preparedness Guide Making a Difference to Vulnerability. World Health Organization, Geneva. [www.who.int/disasters/repo/5814.doc].1998 [cited 2006 Sept 9]. Available from: Google

4. UN-ISDR Terminology on disaster risk reduction (Working document) http://www.adrc.or.jp/publications/terminolgy/top.htm#P accessed on the July 5, 2008

5. McEntire D.A and Myers A. Preparing communities for disasters: issues and processes for government readiness. Disaster Prevention and Management. [http://www.emeraldinsight.com.innpac.wits.ac.za].2004 **[**cited 2006 Sept 9] 13 (2); 140-152. Available from: Wits E-Journal Portal

6. Kelly C, Limitations to the use of the military resources for foreign disaster assistance. Disaster Prevention and Management. **[**http://www.emeraldinsight.com.innpac.wits.ac.za]. 1996. [Cited 2006 Oct 20] 5(1);22-29. Available from**:** Wits E-Journal Portal

7. Wong, K. Turner, P.S. Boppana, A. Nugent, Z. Coltman, T. Cosker, C.D. Blagg, S.E. Preparation for the next major incident: are we ready? Emerg Med J. 2006. 23 (9) : 709-1.

8. Burling W.K and Hyle A.E . Disaster preparedness planning: policy and leadership issues. Disaster Prevention and Management. [http://www.emeraldinsight.com.innpac.wits.ac.za] 1997. [cited 2006 Sept 6] 6(4) 234-244. Available from: Wits E-Journal Portal

9. Lavery, G.G and Horan E. Clinical review: Communication and logistics in response to the 1998 terrorist bombing in Omagh, Northern Ireland. [http://ccforum.com/content/9/4/401] 1998. [cited 2005 Mar 23] 9 401-408. Available from: **www.google.com.au**

10. Cosgrove, S.E., Jenckes, M.W., Kohri, K., Hsu, E.B., Green, G., Feuerstein, C.J., Catlett, C.L., Robinson, K.A., Bass, E.B. Evaluation of a Hospital Drills- A Module Based Approach. John Hopkins University. 2004.

11. United States General Accounting Office Report. Hospital Preparedness-Most Urban Hospitals have emergency plans but lack certain capacities for bio- terrorism response [http://www.gao.gov/newitems/do3924.pdf] Accessed on the July 5, 2008. Available from www.google.com

12. Amitai A., Wilkerson G., Roblin P., Mittal R., Arquilla B. Disaster Preparedness: Training outcomes for Hospital staff [http://www.nyacep.org/scientific] 1998. Available from: **www.google.com.au**

13. Madge, S.N. Kersey, J.P. Murray, G. Murray, J.R. Are we training junior doctors to respond to major incidents? A survey of doctors in the Wessex region. Emerg Med J. 2004. 21:577-579.

14. Brennan, L. Sage, F.J Simpson, A. Major Incident Planning in South East Thames Region: a survey of medical staff awareness and training. J Accid Emerg Med.. 1994. 11(2):85-9.

15. Kai T**,** Ukai T**,** Ohta M**,** Pretto E. Hospital disaster preparedness in Osaka, Japan. Prehospital Disaster Med. Jan-Mar: 1994. (1): 29-34.

16. Murnane M and Cooper D.M. Is the Australian hospital system adequately prepared for terrorism? The Australian Governments Response. MJA. 2005. 183 (11/12) : 572-573.

17. Milsten, A. Hospital Responses to Acute Onset Disasters-A Review. Pre-Hospital and Disaster Med. (2000).15 (1); 32-45.

18. Loutfy M.R., Wallington T, Rutledge T, Mederski B, Rose K, Kwolek S, et al Hospital Preparedness and SARS. Emerg Infect Dis. (2004). 10 (5).

19. Rubin, J.N Recurring Pitfalls in Hospital Preparedness and Response [http://www.homelandsecurityorg/journal/articles/rubm.html] 2004. Accessed on the July 5, 2008. Available from www.google.com

20. Katzenellenbogen J.M, Joubert G, Abdool Karim S.S, editors. Epidemiology-A Manual for South Africa. Cape Town: Oxford, 1997.

21. Sooful, P. An investigation into the maintenance and utilization of government fitted hearing aids. Unpublished Masters Report. University of Pretoria. 2005.

22. Bartley B.H, Stella J.B, Walsh L.D, What is a disaster? Assessing Utility of Simulated Disaster Exercise and Educational Process for Improving Hospital Preparedness [http://pdm.medicine.wisc.edu/21-4%20PDFs/bartley.pdf] 2006. Accessed on July 12, 2008. Available from **www.google.com**

23. Noble R. South Africa HIV & AIDS Statistics [htttp://www.avert.org] Accessed on July 12, 2008. Available from **www.google.com**

24. Government Gazette. South African Disaster Management Act (No 57 of 2002) Vol 451 Cape Town. Available from www.google.co.za

APPENDIX 7A: QUESTIONNAIRE

SURVEY ON KNOWLEDGE, ATTITUDES AND PRACTICES OF SURGICAL REGISTRARS REGARDING HOSPITAL DISASTER PREPARDNESS IN 3 HOSPITALS IN GAUTENG DURING 2007

SECTION A
DEMOGRAPHIC INFORMATION

(Please tick the appropriate answer)

1. **Gender** **Male** **Female**

2. **Where did you complete your undergraduate medical training?**
   South Africa
   International

3. **Which area did you complete your internship?**
   Urban
   Rural

4. **How many years are you in the surgical registrar programme?**
   1 year
   2 years
   3 years
   4 years

5. **Which hospitals do you rotate in for your surgical registrar programme?**
   _____
   _____
   _____
   _____

6. **What are your total years of experience?**
   0-5 year's
   6-10 years
   11-15 years
   16-20 years
   >20 years

SECTION B: KNOWLEDGE AND ATTITUDES SECTION
B1. EMERGENCY PLANNING AND PROVISION OF EMERGENCY SUPPLIES AND EQUIPMENT

(Please tick your answer in the space provided)

1. **Are you aware of a hospital disaster preparedness plan in the hospital you are currently working in?**
   Yes
   No

2. **Have you read the hospital disaster preparedness plan?**
   Yes
   No

3. **What are the critical preparedness activities that need to be addressed in a hospital disaster preparedness plan?**

   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____

4. **Should the hospital disaster preparedness plan account for:**
   Internal disasters only (i.e., disaster in a hospital)
   External disasters only (i.e., disaster outside a hospital)
   Internal and external disasters

5. **Should all departments (medical and non-medical) be involved in the planning phase?**
   Yes
   No
   Don't know

6. **a) Do you think emergency planning is important?**
   Yes
   No
   Don't know
   b) Please explain your answer in detail.

   _____
   _____
   _____

7. **Should the hospital disaster preparedness plan be regularly reviewed and monitored?**
   Yes
   No

Don’t know

8. **a) Do you consider the review and monitoring to be useful?**
   Yes
   No

   b) Please explain your answer in detail.
   _____
   _____
   _____
   _____

9. **Should the hospital disaster preparedness plan designate a command and control area?**
   Yes
   No
   Don’t know

10. **Please explain the function of the command and control centre?**
    _____
    _____
    _____
    _____
    _____

11. **a) Do you think having the command and control is effective during a disaster situation?**
    Yes
    No
    b) Please explain your answer in detail.
    _____
    _____
    _____
    _____

12. **Should the hospital staff have access to additional medical and pharmaceutical supplies in the event of a disaster situation?**
    Yes
    No
    Don’t know

13. **Do you think that the hospital has sufficient staff/personnel to effectively manage a disaster situation?**
    Yes
    No

14. **a) Apart from medical and pharmaceutical supplies, are there any other resources/supplies would the hospital require in the event of a disaster?**
    Yes
    No
    b) Please provide examples.

    _____
    _____
    _____
    _____

15. **Should the hospital disaster preparedness plan include education and training to the hospital staff?**
    Yes
    No

16. **Do you think /consider hospital disaster preparedness training to be adequate?**
    Yes
    No

SECTION C: PRACTICES
TRAINING AND TESTING OF HOSPITAL DISASTER PREPARDENESS PLANS

(Please tick your answer in the space provided)

1. **a) Were you orientated to the hospital disaster preparedness plan on your arrival?**
    Yes
    No
    b) If yes to the above, please state how long did it take for you to be orientated at your current hospital?

    _____
    _____

2. **a) Do training and periodic drills regarding disaster preparedness take place at your hospital?**
    Yes
    No
    If yes, please answer the following:

    b) How often do they occur?

    _____
    _____

    c) Are external agencies involved in the training or drill activities?
    Yes
    No

3. **Describe the methods used during drill activities?**

_____
_____
_____
_____

4. **Do you think your surgical registrar programme has adequately prepared you in terms**
   of managing different disasters within a hospital context?
   Yes
   No

5. **What do you think your role should be in a disaster situation?**

_____
_____
_____
_____

6. **In the event of a major disaster, would you be confident in your role as a surgical registrar?**
   Yes
   No

Thank you for your participation

APPENDIX 7B: Evaluation of the Pilot Questionnaire [14]

1. Was the explanation of the study clear to you?
   Yes / No
   If No please explain why.
   _____
   _____
   _____

2. Did you find the terms/concepts/language used in the study simple and easy to understand?
   Yes/No
   If No please explain:
   _____
   _____
   _____

3. Were any of the terms/language used offensive to you?
   Yes/No
   If No please explain:
   _____
   _____
   _____

4. In your opinion, should any question be excluded from the questionnaire?
   Yes/No
   If yes please indicate the number of the question and explain why.
   _____
   _____
   _____

5. In your opinion should any other question be included in the questionnaire, other than the ones already there? Please motivate your answer.
   _____
   _____
   _____

Thank you for your time!

APPENDIX 7C: ETHICS CERTIFICATE TOGETHER WITH THE AMENDMENT

LETTER APPROVAL

Ms Joanne Sahdeo
School of Public Health
Student Number: 0515788P
Masters in Public Health (Disaster Management)
Email: joanne120179@webmail.co.za
Cell phone: 076 85 85 257

6th November 2006

Dear Professor Peter Cleaton-Jones

RE: AMMENDMENT LETTER FOR MY MPH RESEARCH PROJECT.

My name is Joanne Sahdeo. I am currently registered for my Masters in Public Health (Disaster Management) at the University of Witwatersrand, Johannesburg. My student number is 0515788P.

In September 2006, I completed and forwarded an ethics application for my master's research project which was then titled "Health Care Workers Knowledge, Attitudes and Practices of Hospital Disaster Preparedness across 3 central hospitals in Gauteng".

An email confirming that the ethics application had been approved, on condition that participants are invited to participate and that the services of a statistician be recruited for data analysis was received in late October 2006.

However, after much consideration, it was jointly decided by my supervisor and me to change the subject population to just surgical registrars working in 3 tertiary hospitals in Gauteng. Thus the title of the masters research project is now " Surgical Registrars Knowledge, Attitude and Practices regarding Hospital Disaster Preparedness across 3 hospitals in Gauteng".

The recommendations received with the ethics application submitted in September 2006 have been noted and included in the revised protocol.

It would be greatly appreciated if this amendment to my master's research project is noted and if ethical clearance be granted for the new title.

Should you require any further information, please feel free to contact me via the email address cited above.

Thanking you

Joanne Sahdeo
MPH2 Student

Prof Shan Naidoo
Research Supervisor

APPENDIX 7D: LETTER OF PERMISSION

Ms Joanne Sahdeo
School of Public Health
University of the Witwatersrand
Johannesburg

31st October 2006

Dear Professor M Veller
School of Surgical Medicine
University of the Witwatersrand (Medical School)

RE: LETTER OF PERMISSION TO CONDUCT MPH RESEARCH

My name is Joanne Sahdeo; an Audiologist practicing at Dr Yusuf Dadoo Hospital in Krugersdorp. As a part time student at the School of Public Health, University of Witwatersrand, and as part fulfillment of the requirements towards the Master of Public Health Degree, I am undertaking a study investigating surgical registrar's knowledge, attitude and practices regarding hospital disaster preparedness.

A perusal of the relevant literature reveals that while considerable research exists for the assessment of hospital disaster preparedness within an international context, there was a lack of information pertaining to the South African setting. This study would therefore serve as a baseline survey of the knowledge, attitudes and practices of surgical registrars concerning hospital disaster preparedness within South Africa. Further, given that the study is descriptive in nature, it would serve to "give service providers and planners information that would help them design services and allocate resources efficiently' (Katzenellenbogen, et al, 1997). The latter is especially relevant for developing countries like South Africa, where financial resources are limited and should therefore be utilized optimally in preventative and preparedness programmes.

The study population would be a total of 30 randomly selected surgical registrars. The surgical registrars would be asked to volunteer participation through staff meetings. They will be expected to complete a self-administered questionnaire, during normal working hours and which should take 15-20 minutes of their time. Ethical clearance will be obtained from the Wits Ethical Committee.

An information sheet would be attached to the self administered questionnaire, explaining the reasons for the study, what is expected of the participants and the benefits of participation. Other important issues such as confidentiality would also be addressed in the information sheet.

The first section of the questionnaire would deal with the surgical registrar's demographic information. Section 2 deals with the surgical registrars' knowledge and attitudes about hospital disaster preparedness, while section 3 will focus on the practices.

The study is voluntary and participants may withdraw at any time without providing a reason. No person who wishes not to participate will be victimized in any way.
Confidentiality will be maintained at all times. No names will be required at any stage during the research and the study number will not be linked back to any participant.

Should you require any further information, please feel free to contact me on (011) 951 6062. Further, should you require any information regarding rights of a research

participant, or have complaints regarding this study, you may contact Ms Anisa Keshav, the secretary to the University of the Witwatersrand Human Research Ethics Committee on (011) 717 22 29.

Thanking you

_____

Yours faithfully,

Ms Joanne Sahdeo

MPH Student

Informed consent form

I hereby grant permission/do not grant permission for the above study to be undertaken with surgical registrars from the School of Surgical Medicine in the University of Witwatersrand (Medical School).

Thank you

_____ _____

Prof M. Veller Date

Ms Joanne Sahdeo
School of Public Health
University of the Witwatersrand
Johannesburg

26th January 2007

Dear **Professor H. Becker**
Head of Department of Surgery
University of Pretoria (Medical School)

RE: LETTER OF PERMISSION TO CONDUCT MPH RESEARCH

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The study is voluntary and participants may withdraw at any time without providing a reason. No person who wishes not to participate will be victimized in any way.
Confidentiality will be maintained at all times. No names will be required at any stage during the research and the study number will not be linked back to any participant.

Should you require any further information, please feel free to contact me on (011) 951 6062. Further, should you require any information regarding rights of a research

participant, or have complaints regarding this study, you may contact Ms Anisa Keshav, the secretary to the University of the Witwatersrand Human Research Ethics Committee on (011) 717 22 29.

Thanking you

_____

Yours faithfully,

Ms Joanne Sahdeo

MPH Student

Informed consent form

I hereby grant permission/do not grant permission for the above study to be undertaken with surgical registrars from the Department of Surgery in the University of Pretoria.

Thank you

_____ _____

Prof H Becker **Date**

APPENDIX 7E: INFORMATION SHEET

Good Day,

My name is Joanne Sahdeo; an Audiologist practicing at Dr Yusuf Dadoo Hospital in Krugersdorp. As a part time student at the School of Public Health, University of Witwatersrand, and as part fulfillment of the requirements towards the Master of Public Health Degree, I am undertaking a study investigating surgical registrar's knowledge, attitude and practices regarding hospital disaster preparedness.

Why am I doing this?

A perusal of the relevant literature reveals that while considerable research exists for the assessment of hospital disaster preparedness within an international context, there was a lack of information pertaining to the South African setting. This study would therefore serve as a baseline survey of the knowledge, attitudes and practices of surgical registrars concerning hospital disaster preparedness within South Africa. Further, given that the study is descriptive in nature, it would serve to "give service providers and planners information that would help them design services and allocate resources efficiently' (Katzenellenbogen, et al, 1997). The latter is especially relevant for developing countries like South Africa, where financial resources are limited and should therefore be utilized optimally in preventative and preparedness programmes.

What is expected of the participants?
You will be expected to complete a self-administered questionnaire. The first section will deal with your demographic information. Section 2 deals with your knowledge and attitudes about hospital disaster preparedness, while section 3 will focus on the practices.

Are there benefits to the participants?
As a surgical registrar you would be contributing to the development of a body of knowledge that would ultimately serve to enhance the quality of health care services in South Africa.

May I withdraw from the study?
Certainly you may withdraw at any time by not completing the whole questionnaire. Your response will be anonymous and you will not be discriminated in any way by not participating or leaving out any of the answers.

What about confidentiality?
Anonymity and confidentiality will be maintained at all time. No names will be required at any stage during the research. The study number will not be linked back to you as a participant. The results would be presented as a group format so that no individual can be identified and the results will be made available to you on request after the study.

If you have any queries, more information may be obtained from myself at (011) 951 60 62.

Should you require any information regarding your rights as a research participant, or have complaints regarding this study, you may contact Ms Anisa Keshav, the secretary to the University of the Witwatersrand Human Research Ethics Committee on (011) 717 1234.

If you are willing to participate, please complete the attached consent form together with the questionnaire and place in sealed envelope provided to you. Thereafter, place the sealed envelope in the box in the designated area. The researcher would collect the questionnaire within a week.

Thank you

Ms Joanne Sahdeo

Consent Form

I hereby consent /do not consent to participate in the above mentioned study.

Thank you

_____ _____

Signature Date

Table 3.10 Attitudes to disaster preparedness by gender

Gender		Frequency	Percent
Male	Negative views about hospital disaster preparedness	3	15.0
	Neutral views about hospital disaster preparedness	7	35.0
	Positive views about hospital disaster preparedness	10	50.0
	Total	20	100.0
Female	Negative views about hospital disaster preparedness	1	20.0
	Neutral views about hospital disaster preparedness	1	20.0
	Positive views about hospital disaster preparedness	3	60.0
	Total	5	100.0

Table 3.16 Practices of disaster preparedness by gender

Gender		Frequency	Percent
Male	Poor practices are being Implemented	16	80.0
	Average practices are being Implemented	3	15.0
	Good practices are being Implemented	1	5.0
	Total	20	100.0
Female	Poor practices are being Implemented	5	100.0