CHAPTER 6

RESULTS

With reference to the research methodology, as discussed in chapter 1, section 1.7, phase 2, steps 5-6, the objective of this chapter is to report on and interpret the quantitative results. The five empirical objectives as set out in chapter 1, section 1.3 will be addressed and hypotheses as indicated in chapter 5, section 5.5 will be tested. The chapter concludes with an integration of the empirical findings and a summary.

6.1 BIOGRAPHICAL DATA

Biographical variables are known to be important variables in the aetiology of stress and burnout (see chaps. 2 & 3).

The biographical data is presented for age, gender, marital status, number of children, religion, country of graduation, additional qualifications, area of employment, and number of hours worked per week.

6.1.1 Age distribution

The age distribution of the sample varied from 25 – 43 years as evident below.

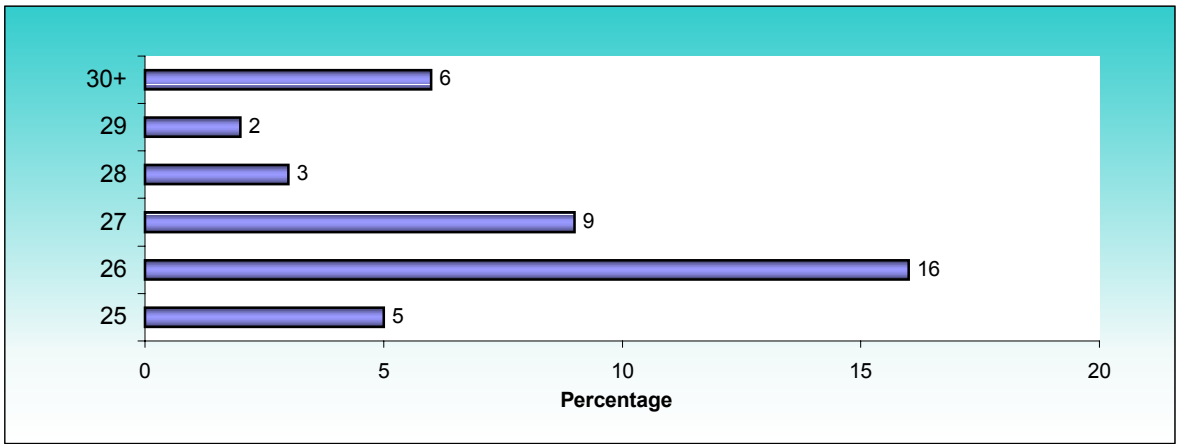

Figure 6.1 Age distribution

6.1.2 Gender

The sample consisted of 26 males and 15 females, as evident in figure 6.2 below. Figure 6.3 is an indication of gender distribution by area of employment.

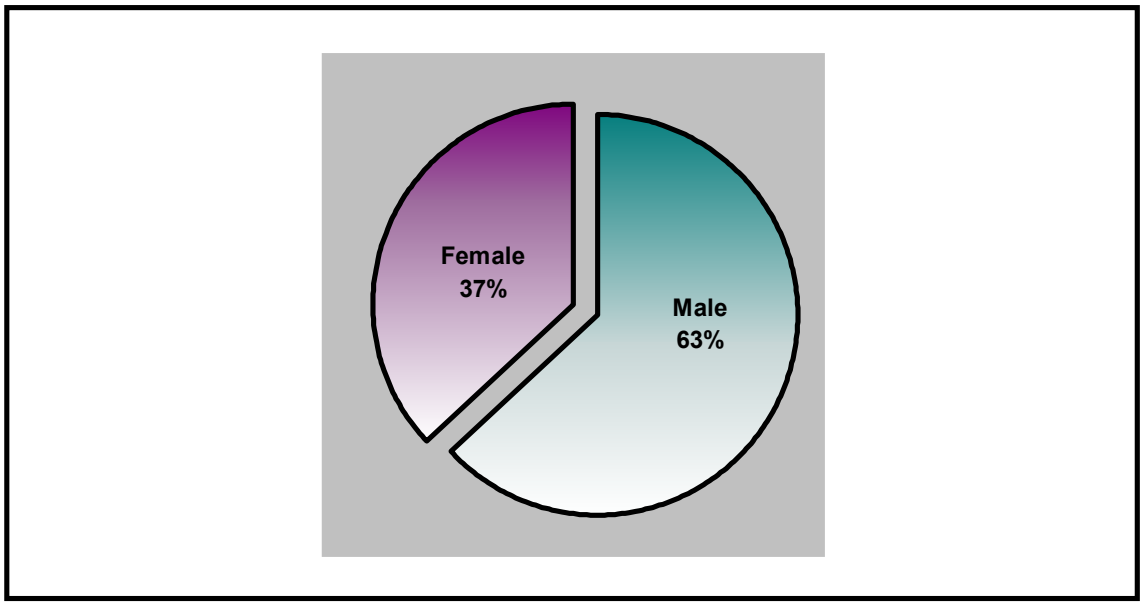

Figure 6.2 Gender distribution

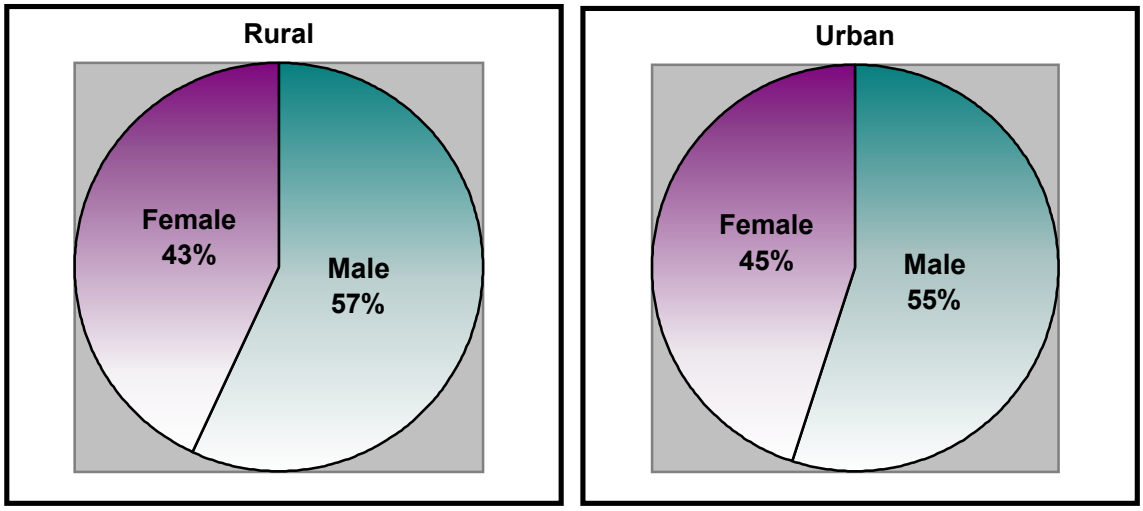

Figure 6.3 Gender distribution by area of employment

6.1.3 Marital status

The majority of the sample was unmarried as depicted in figure 6.4.

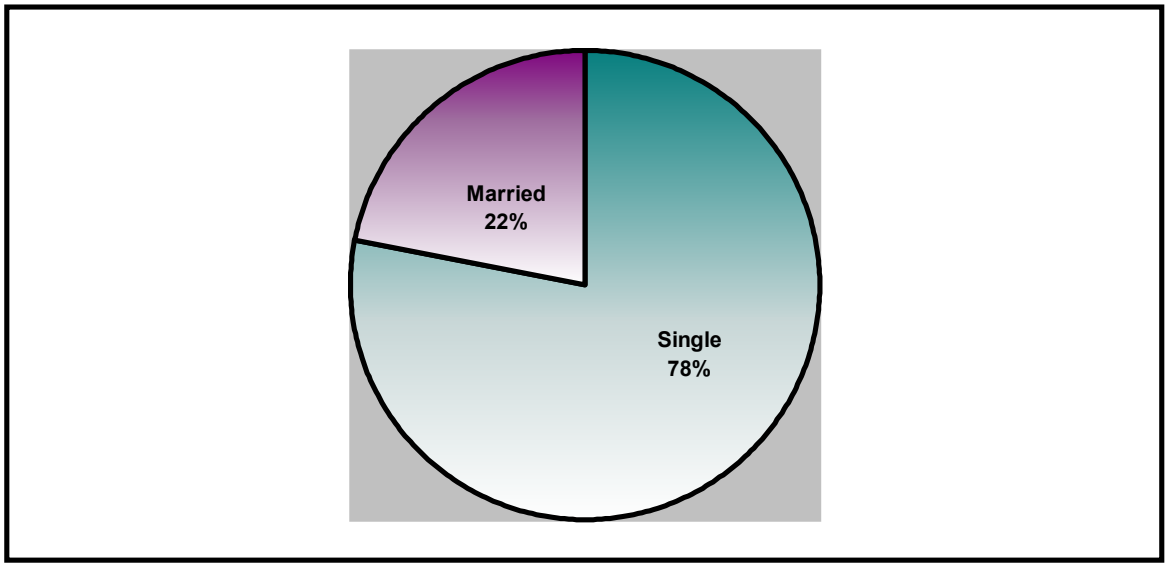

Figure 6.4 Marital status

6.1.4 Number of children

Only 12,5% of the sample had children as seen in figure 6.5.

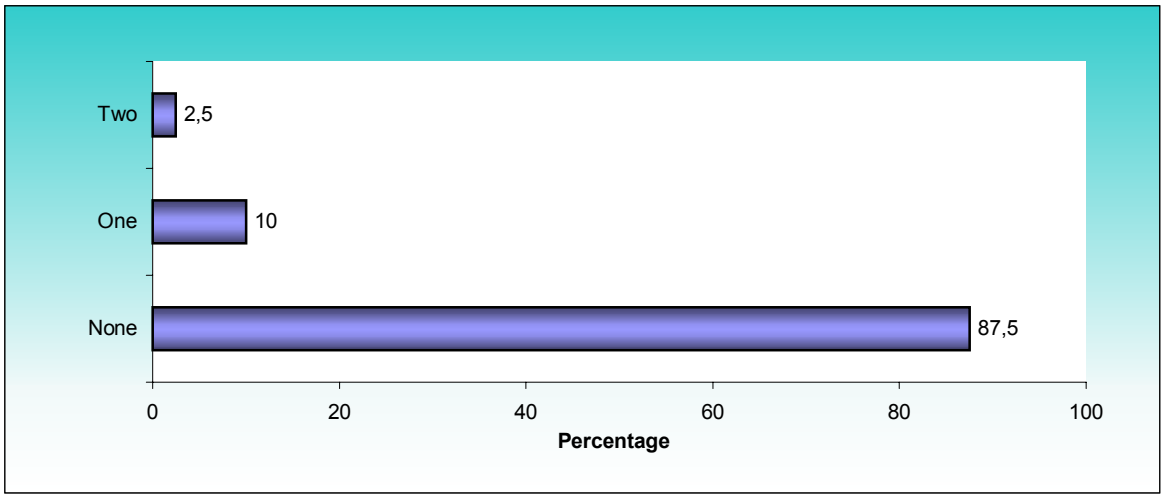

Figure 6.5 Number of children

6.1.5 Religion

Figure 6.6 indicates the religious denominations of the sample.

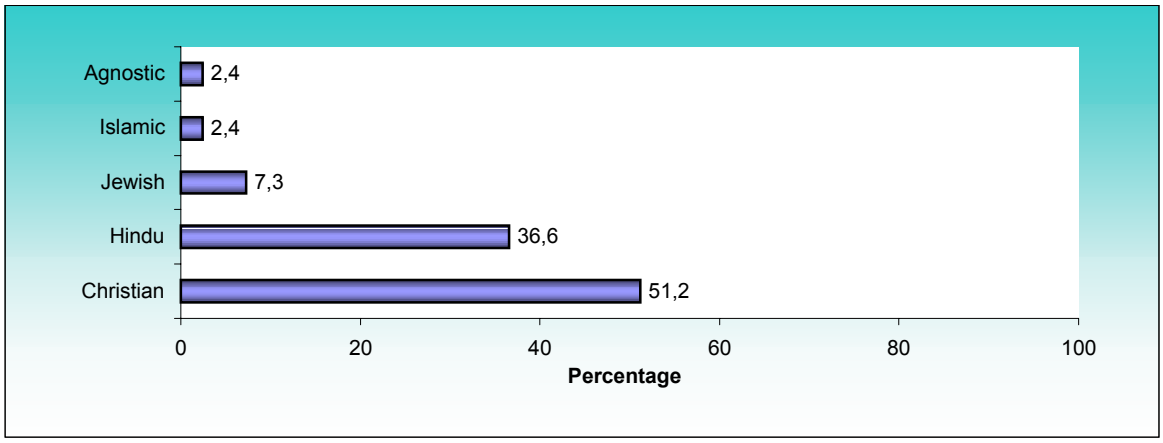

Figure 6.6 Religious denomination

6.1.6 Country of graduation

The sample consisted primarily of South African qualified doctors as indicated in figure 6.7.

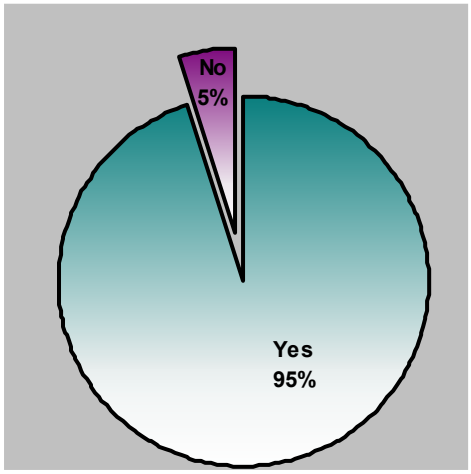

Figure 6.7 Country of graduation

6.1.7 Additional qualifications

The additional qualifications (besides MBChB) of the sample are indicated in figure 6.8.

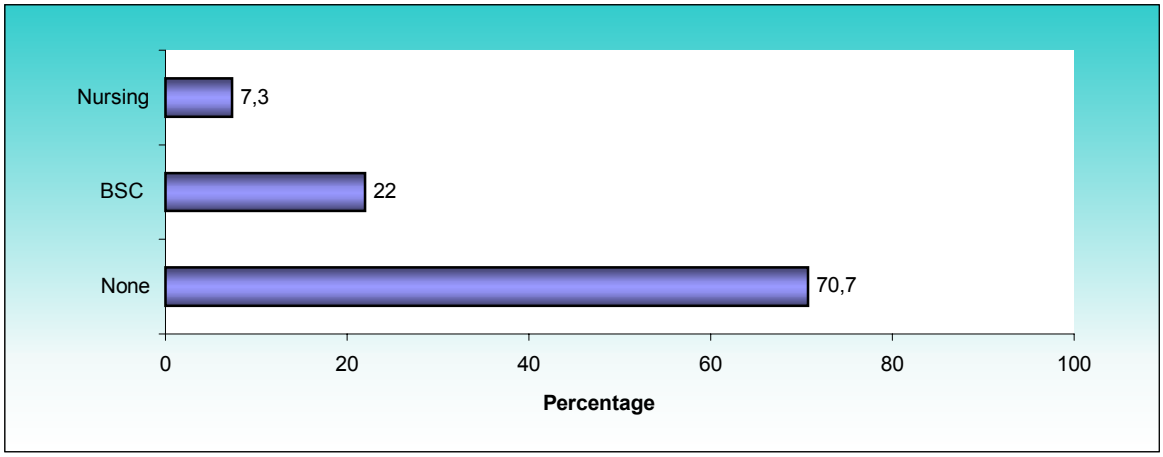

Figure 6.8 Additional qualifications

6.1.8 Area of employment

A distribution of rural and peri-urban hospital participation was achieved in the sample as depicted in figure 6.9.

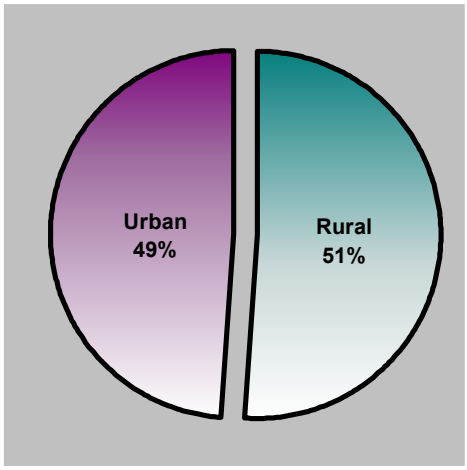

Figure 6.9 Area of employment

6.1.9 Number of hours worked per week

The mean number of hours worked per week was 59.8 hours. The number of hours worked per week was included as an indication of workload in figure 6.10.

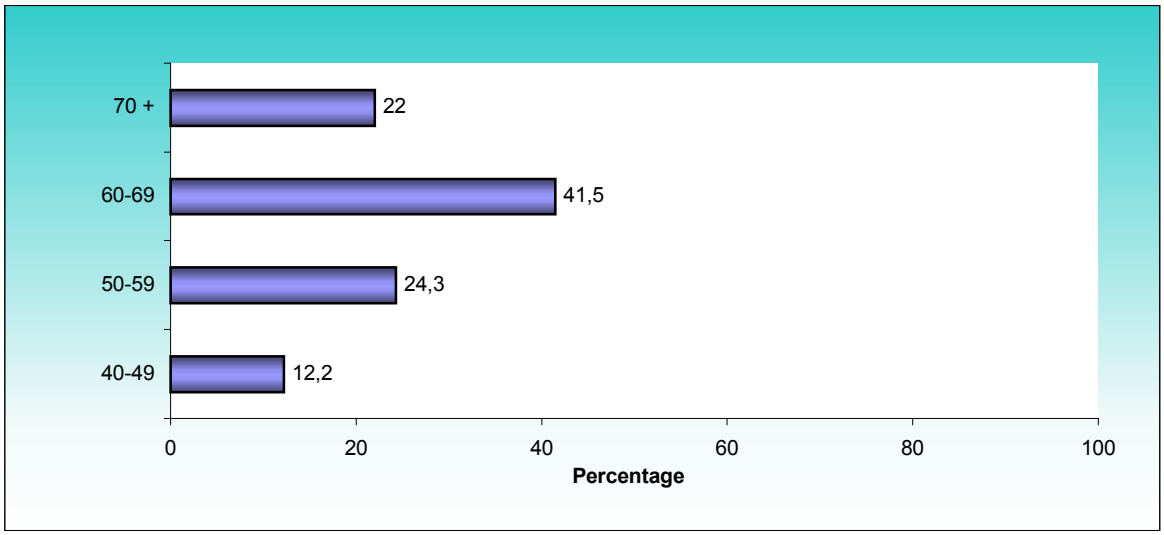

Figure 6.10 Number of hours worked per week

- **Interpretation**

By analysing the above data, the biographical profile of the subject in this research can be summarised as follows: a typical 26 year old single male of Christian faith and with no children, graduated from a South African university with no additional qualifications; currently employed as a community service doctor in either a rural or peri-urban hospital and working an average of 62 hours per week.

The following (fig. 6.11) is a summary description of the biographical data of the sample as presented thus far in this chapter.

Category	*N*
Age (years)	
20-29	35
30-39	3
40-49	3
Gender	
Male	26
Female	15
Marital status	
Married	9
Single	32
Number of children	
None	36
1 child	4
2 children	1
Religion	
Agnostic	1
Islamic	1
Jewish	3
Hindu	15
Christian	21
Place of university qualification	
South Africa	39
Abroad	2
Other qualifications	
None	29
Bachelor of Science	9
Nursing	3
Area of employment	
Urban	0
Rural	21
Peri-Urban	20
Hours worked per week	
40-49	5
50-59	10
60-69	17
70-79	7
80-89	2

Figure 6.11 Summary of biographical data of sample

This concludes the presentation of the biographical data.

6.2 RELIABILITIES OF THE SIX PSYCHOMETRIC INSTRUMENTS

Single factor solutions were obtained for the dimensions and subdimensions of the various psychometric questionnaires administered. The results of these reliabilities are presented below.

Table 6.1 contains the cronbach alphas for the Stress Diagnostic Survey.

Table 6.1 Single factor loadings and cronbach alphas for the Stress Diagnostic Survey

Role conflict		**Role ambiguity**		**Work overload quantitative**		**Work overload qualitative**		**Career development**		**Responsibility for people**	
Item	Factor loading	Item	Factor loading	Item	Factor loading	Item	Factor loading	Item	Factor loading	Item	Factor loading
1	0,61	2	0,35	3	0,48	4	0,48	5	0,66	6	0,18
7	0,65	8	0,43	9	0,31	10	0,68	11	0,61	12	0,47
13	0,53	14	0,52	15	0,72	16	0,92	17	0,81	18	0,44
19	0,88	20	0,50	21	0,90	22	0,65	23	0,61	24	0,37
25	0,46	26	0,95	27	0,76	28	0,34	29	0,63	30	0,88
cronbach alpha = 0,76		cronbach alpha =0,67		cronbach alpha =0,76		cronbach alpha =0,74		cronbach alpha =0,80		cronbach alpha = 0,57	

In the table above, the scales are found to have reasonable internal consistency reliability varying from 0,57 to 0,80. When the small number of items per stress dimension are taken into account, the only exception is responsibility for people for which the cronbach alpha is 0,57.

Table 6.2 contains the cronbach alphas for the Maslach Burnout Inventory.

Table 6.2 Single factor loadings and cronbach alphas for the Maslach Burnout Inventory

Emotional exhaustion			**Depersonalisation**			**Personal accomplishment**		
Item	Factor loading		Item	Factor loading		Item	Factor loading	
	F	I		F	I		F	I
MBIF1	0,80	0,74				MBIF4	0,47	0,62
MBIF2	0,79	0,85	MBIF5	0,49	0,68	MBIF7	0,46	0,51
MBIF3	0,75	0,78	MBIF10	0,82	0,84	MBIF9	0,59	0,56
MBIF6	0,54	0,52	MBIF11	0,73	0,66	MBIF12	0,21	-0,00
MBIF13	0,67	0,67	MBIF15	0,68	0,68	MBIF17	0,33	0,07
MBIF14	0,43	0,53	MBIF22	0,00	0,34	MBIF18	0,45	0,25
MBIF16	0,24	0,30				MBIF19	0,81	0,68
MBIF20	0,73	0,55				MBIF21	0,17	0,68
cronbach alpha	0,83	0,83	cronbach alpha	0,78 [1]	0,81	cronbach alpha	0,66 [2]	0,71

[1]Item 22 excluded in both scales F and I.

[2]Items 12 and 17 excluded in both scales, F and I.

In the table above, the subscales of emotional exhaustion, depersonalisation and personal accomplishment of the Maslach Burnout Inventory are found to have acceptably high internal consistency reliability as reflected by the cronbach alpha values which range from 0,66 to 0,83.

Table 6.3 reflects the cronbach alphas for Sense of Coherence.

Table 6.3 Single factor loadings and cronbach alphas for the Sense of Coherence dimensions

Comprehension		**Manageability**		**Meaningfulness**	
Item	Factor loading	Item	Factor loading	Item	Factor loading
1	0,39	2	0,12		
3	-0,03	6	0,36	4	0,61
5	0,53	9	0,10	7	0,59
10	0,43	13	0,71	8	0,73
12	0,42	18	0,57	11	0,49
15	0,46	20	0,74	14	0,71
17	0,76	23	0,63	16	0,58
19	0,75	25	0,50	22	0,68
21	0,38	27	0,62	28	0,71
24	0,69	29	0,21		
26	0,58				
cronbach alpha =0,74[1]		cronbach alpha =0,68 [2]		cronbach alpha =0,79[3]	

[1]Item 3 was excluded.

[2]Items excluded are 2 and 9.

[3]No Items were excluded.

In the table above, the subscales of comprehension, manageability and meaningfulness of Antonovsky's (1979) Sense of Coherence Scale have acceptably high reliabilities varying from 0,68 to 0,74 as reflected by the cronbach alpha values.

Table 6.4 contains the cronbach alphas for Hardiness.

Table 6.4 Single factor loadings and cronbach alphas for the Hardiness dimensions

Commitment/alienation		**Control/powerlessness**		**Challenge/threat**	
Item	Factor loading	Item	Factor loading	Item	Factor loading
PVS1	-0,39	PVS3	-0,46	PVS2	0,35
PVS8	0,33	PVS4	-0,24	PVS6	0,58
PVS11	0,61	PVS5	-0,13	PVS9	0,25
PVS14	0,28	PVS7	0,67	PVS12	0,46
PVS17	0,66	PVS10	0,63	PVS15	0,69
PVS20	0,22	PVS13	-0,13	PVS18	0,63
PVS23	-0,05	PVS16	0,25	PVS21	0,26
PVS26	-0,52	PVS19	0,76	PVS24	-0,23
PVS29	0,52	PVS22	-0,22	PVS27	-0,29
PVS32	0,41	PVS25	-0,17	PVS30	0,59
PVS38	0,48	PVS28	0,39	PVS33	0,22
PVS39	0,17	PVS31	0,61	PVS36	0,48
PVS41	0,48	PVS34	0,69	PVS37	0,34
PVS44	0,70	PVS35	-0,01	PVS40	0,36
PVS47	0,49	PVS42	0,40	PVS43	0,80
PVS50	0,47	PVS45	0,71	PVS46	0,30
		PVS48	0,32	PVS49	0,37
cronbach =0,72 [1] alpha		cronbach =0,72 [2] alpha		cronbach = 0,72[3] alpha	

[1]Item 23 is excluded and items reverse scored are 1, 23 and 26.

[2]Item 35 is excluded and items reverse scored are 3, 4, 5, 13, 22 and 25.

[3]No items excluded. Items reverse scored are 27 and 24.

In the table above, the subscales commitment, control and challenge of Kobasa's (1982) Personal Views Survey indicate relatively high internal consistency reliability as reflected by the cronbach alpha values which are in the range of 0,72.

Table 6.5 reflects cronbach alphas for Locus of Control.

Table 6.5 Single factor loadings and cronbach alphas for the Locus of Control construct

Item	Factor loading
2	0,70
3	0,38
4	0,68
5	0,21
6	0,32
7	0,24
9	0,51
10	0,45
11	0,49
12	0,17
13	0,49
15	0,42
16	0,32
17	0,21
18	0,50
20	0,06
21	0,43
22	0,21
23	0,57
25	0,51
26	-0,08
28	0,59
29	-0,12
cronbach alpha = 0,81 [1]	

[1]Items excluded are 20, 26 and 29 while remaining items are scaled in such a way that a high score indicates high internal locus of control.

In the table above, the reliabilty of the Locus of Control is high as reflected by the cronbach alpha value of 0,81.

Table 6.6 indicates the cronbach alpha for Learned Resourcefulness.

Table 6.6 Single factor loadings and cronbach alphas for the Self-Control Schedule

Item	Factor loading
SCS1	0,13
SCS2	0,60
SCS3	0,52
SCS4	-0,20
SCS5	0,53
SCS6	-0,30
SCS7	0,77
SCS8	0,19
SCS9	-0,33
SCS10	0,64
SCS11	0,60
SCS12	0,41
SCS13	0,60
SCS14	-0,21
SCS15	0,42
SCS16	0,03
SCS17	0,22
SCS18	-0,22
SCS19	-0,32
SCS20	0,40
SCS21	0,08
SCS22	0,58
SCS23	0,06
SCS24	0,22
SCS25	0,42
SCS26	0,25
SCS27	0,01
SCS28	0,10
SCS29	-0,42
SCS30	0,33
SCS31	0,21
SCS32	0,57
SCS33	0,28
SCS34	0,16
SCS35	-0,19
SCS36	-0,09
cronbach alpha =0,82[1]	

[1]Items excluded are 16, 21, 23, 27, 28 and 36 while the remaining items were all scaled in such a way that a high score on the scale indicates high self-control.

In the table above, the internal consistency reliability is high as reflected by the cronbach alpha score of 0,82.

- **Interpretation**

Overall, the six psychometric instruments used in this study were found to have high internal consistency reliabilities as reflected by the generally high cronbach alpha values.

- **NOTE**

The following sections will utilise parametric statistical analyses. The motivation for the use of parametric statistics and factor analyses in this research are presented in chapter 5, sections, 5.4.7 and 5.4.8.

6.3 LEVELS OF STRESS

In this section, hypothesis 1, which states that the stress experienced by community doctors is higher than that of other helping professionals, is tested.

The categorisation of the sample into low, moderate and high stress groups were created for each subscale of the Stress Diagnostic Survey (SDS). This was followed by a comparative analysis of stress in table 6.8 with a sample of ministers.

According to the scoring and interpretation instructions for the Stress Diagnostic Survey in table 6.7, the sample of community service doctors was categorised into low, moderate and high stress groups according to their responses on each of the subscales. Scores below 10 (or 16,6 on the 0 to 100 scale used in the present study) were classified as low stress scores, while those between 10 (16,6) and 24 (63,3 on a 0 to 100 scale) were classified as moderate stress scores. Scores greater than 24 (63,3) were classified as high stress scores.

Table 6.7 Categorisation of Stress Diagnostic Survey scores

Stress Diagnostic Scale	Stress classification					
	Low (0-16,6)		**Moderate (16,6-63,3)**		**High (>63,3)**	
	N	%	*N*	%	*N*	%
Role ambiguity	6	15	29	70	6	15
Role conflict	12	29	27	66	2	5
Work overload (quantitative)	2	5	25	61	14	34
Work overload (qualitative)	5	12	33	80	3	8
Career development	0	0	18	44	23	56
Responsibility for people	1	2	19	47	21	51

The results of the categorisation, as reflected by table 6.7, indicate the following:

- In the high stress category, 56% of the community service doctors reported that career development stress was the single highest stressor. This was followed by 51% of the sample reporting that responsibility for people was the next highest stressor.

- The majority of the responses occurred in the moderate stress category across the six subscales. In the moderate stress category, 80% of the sample reported qualitative work overload to be the highest stressor. Role ambiguity was the next highest stressor (70%). This was followed by 66% and 61% of the sample reporting quantitative role conflict and quantitative work overload as the third and fourth highest stressors, respectively.

- In the low stress category, 29% and 15% of the sample reported role ambiguity and role conflict as the most significant stressors for this category.

Since norms for the health profession are unavailable for the SDS, it was decided to compare the present sample to a sample of ministers who were assessed using this instrument by Arumugam (2003) for purposes of a doctoral research. Furthermore, studies using the SDS were unavailable for the medical profession. The ministerial sample was, therefore, considered appropriate as it falls under the umbrella of the helping professions. All scores on the SDS subscales of the

ministers were scaled to measure from 0 (low) to 100 (high) to ensure that the results were comparable to that of the present research.

Table 6.8 Comparison of present sample against the comparative sample of ministers (Arumugam, 2003) for the Stress Diagnostic Survey

	N [1]	*N* [2]	Mean [1]	Mean [2]	Std dev [1]	Std dev [2]	*t*-value	1-tail p-value
Role conflict	41	44	27,50	22,42	17,44	17,64	1,33	0,09
Role ambiguity	41	44	36,02	25,00	18,09	14,03	3,12	0,00
Work overload (quantitative)	41	44	47,89	37,80	19,50	19,78	2,37	0,01
Work overload (qualitative)	41	44	31,87	31,74	15,83	17,95	0,03	0.49
Career development	41	44	60,33	24,69	23,56	19,90	7,50	0,00
Responsibility for people	41	44	56,76	70,00	16,57	16,31	-3,71	…[3]

[1] Present sample of community service doctors.

[2] Ministers (Arumugam, 2003)

[3] Difference not in the direction hypothesised in the present study, so that 1-tailed p-value inappropriate.

Table 6.8 reflect the following results:

- The sample of community service doctors scored significantly higher with regards to role ambiguity, mean difference = 11,02; *t* = 3,12; p = 0,00. The higher the scores on role ambiguity, the higher the stress. This result, therefore, implies that community doctors show more stress than ministers; it, therefore, gives support to hypothesis 1.

- The sample of community service doctors scored significantly higher with regards to work overload (quantitative), mean difference = 10,09; *t* = 2,37; p = 0,01. The higher the scores on work overload (quantitative), the higher the stress. This result, therefore, implies that community service doctors show more stress than ministers and lends support to hypothesis 1.

- The sample of community service doctors scored significantly higher on career development stress, mean difference = 35,64, *t* = 7,50; p = 0,00. The higher the scores on career development stress, the higher the stress. This result implies that community service doctors show more stress than ministers and thus supports hypothesis 1.

- The ministerial sample scored significantly higher on responsibility for people than the present sample, mean difference = 13,24; *t* = -3,71; p = 0,00. This implies that ministers show more stress than community service doctors, thus not lending support to hypothesis 1.

- The sample of community service doctors and the sample of ministers reported similarly in their experience of role conflict and work overload (qualitative) as indicated in nonsignificant differences, p = 0,09 and p = 0,49, respectively.

▪ **Interpretation**

According to the manual, scores higher than 24 (this is on a scale from 5 to 35) indicate high stress. In terms of the scale from 0 to 100 used in the present study, scores higher than 63,3 indicate high stress. None of the means in table 6.8 for the community doctors are higher than 63,3 but fall between 16,6 and 63,3. This indicates moderate stress.

The means differences on the majority of the dimensions for the present sample when compared to the ministerial sample provide preliminary evidence of high levels of stress.

When compared to ministers, the community doctors were found to show equal or more stress on all the scales except “responsibility for people”. Overall, these results confirm hypothesis 1 that community service doctors do report higher levels of stress than other helping professions. In terms of the manual, however, the mean scores of the community doctors fall in the moderate range which does not indicate high stress. The reference group used for comparative purposes was

also considered insufficient to provide conclusive evidence towards the rejection of hypothesis 1. As more results on health professions other than ministers become available in the research literature, comparisons of community doctors with these groups should build the evidence either in favour or not in favour of hypothesis 1.

The first specific empirical objective of this research (chap. 1, sec. 1.3.2), namely, to ascertain the level of stress amongst community service doctors in KwaZulu-Natal hospitals, has been addressed.

6.4 LEVELS OF BURNOUT

In this section, hypothesis 2 is tested, which states that the burnout of community service doctors is higher than that of other helping professionals.

Classification and normative comparisons for the three subscales of the Maslach Burnout Inventory (MBI) are presented below (table 6.9 & table 6.10).

According to the scoring and interpretation instructions for this measuring instrument, Maslach and Jackson (1981) recommend that because of limited knowledge about the relationships between the three aspects of burnout, the scores for each subscale should be considered separately. Also, the frequency and intensity scores for each subscale were computed separately, thereby resulting in six separate scores which need to be considered.

Table 6.9 categorises the percentage results for the sample in terms of low, moderate or high levels of burnout according the MBI manual classification (Maslach & Jackson, 1981, p. 2).

Table 6.9 Categorisation of community service doctors into low, moderate and high burnout according to the Maslach Burnout Inventory (*N* = 41)

Depersonalisation frequency	**Frequency**	**Percent**
High	24	58,5
Low	6	14,6
Moderate	11	26,8
Depersonalisation intensity	**Frequency**	**Percent**
High	26	63,4
Low	4	9,8
Moderate	11	26,8
Personal accomplishment frequency	**Frequency**	**Percent**
High	10	24,4
Low	15	36,6
Moderate	16	39,0
Personal accomplishment intensity	**Frequency**	**Percent**
High	11	26,8
Low	23	56,1
Moderate	7	17,1
Emotional exhaustion frequency	**Frequency**	**Percent**
High	14	34,11
Low	9	22,0
Moderate	18	43,9
Emotional exhaustion intensity	**Frequency**	**Percent**
High	9	22,0
Low	11	26,8
Moderate	21	51,2

Table 6.9 reflects the following:

- For the depersonalisation frequency scale, 73,1% of the sample reported moderate to high burnout scores and 14,6% of the sample reported low burnout scores. For depersonalisation intensity, 90,2 % of the sample reported moderate to high burnout scores while only 9,8% of the sample reported low burnout scores.

- In terms of personal accomplishment frequency, 63,4% of the sample reported moderate to high burnout scores. For personal accomplishment intensity, a little more than half, 56,1%, reported low burnout scores, whilst 43.9% reported moderate to high burnout scores.

- On the dimension emotional exhaustion frequency, 78% of the sample reported moderate to high burnout scores, with 22% reporting low burnout scores. For emotional exhaustion intensity, 73,2% reported moderate to high burnout scores, while only 26,8% reported low burnout scores.

The sample of community service doctors (n=41) was compared to the normative sample studied by Maslach and Jackson (1981). The MBI normative sample represented the following helping professionals: 845 social security administration public contact employees, 142 police officers, 231 nurses, 125 agency administrators, 222 teachers, 97 counsellors, 91 social workers, 68 probation officers, 63 mental health workers, 86 physicians, 40 psychologists and psychiatrists, 31 attorneys and 77 others (n=2118) (Maslach & Jackson, 1981, p. 2).

Table 6.10 Means and standard deviations for community service doctors and the normative sample on the Maslach Burnout Inventory subscales

Variable	*N* [1]	*N* [2]	Mean [1]	Mean [2]	Std dev [1]	Std dev [2]	*t*-value	1-tail p-value
Depersonalisation frequency	41	2118	13,05	9,40	6,29	6,9	3,67	0,00
Depersonalisation intensity	41	2118	17,59	11,71	8,01	8,09	4,65	0,00
Personal accomplishment frequency	41	2118	36,68	36,01	5,81	6,93	0,73	…
Personal accomplishment intensity	41	2118	39,34	39,70	6,26	7,68	-0,36	0,36
Emotional exhaustion frequency	41	2118	24,63	24,08	8,76	11,88	0,40	0,35
Emotional exhaustion intensity	41	2118	31,63	31,68	9,76	13,84	-0,03	…[3]

[1] Present sample of community service doctors.

[2] General helping professions sample (Maslach & Jackson, 1981, p. 2).

[3] Difference not in the direction hypothesised in the present study, so that 1-tailed p-value inappropriate.

The results of table of 6.10 indicate the following:

- The present sample of community service doctors scored generally higher than the sample of helping professionals on all the MBI scales except for the personal accomplishment frequency scale (here a high score indicates less burnout) and the emotional exhaustion intensity scale (here a high score indicates more burnout).

- These results were, however, significant for only two scales in favour of higher burnout levels for the sample of community doctors namely: depersonalisation frequency score, mean difference = 4,1; *t* = 3,67; p = 0,00 and depersonalisation intensity score, mean difference = 5,88; *t* = 4,65; p = 0,00.

- No significant differences was found for the emotional exhaustion and personal accomplishment scales, thus indicating that for these two scales, the

community service doctors scored in the similar range when compared to the general population of helping professionals as reported by Maslach and Jackson (1981).

- **Interpretation**

The mean difference on the majority of individual scales, when compared to the normative group, provided preliminary evidence of high levels of burnout.

The classification of scores, according to the MBI manual, indicated that the present sample reported high levels of burnout with regard to depersonalisation frequency and intensity; moderate to low burnout was reported for personal accomplishment frequency and intensity and moderate to high burnout was reported for emotional exhaustion frequency and intensity.

The present sample reported significantly higher levels of burnout for depersonalisation frequency and intensity than the sample of general helping professions. Thus, the second hypothesis of this research is confirmed with regard to "depersonalisation" only. On the majority of scales (emotional exhaustion and personal accomplishment), the community doctors scored in the similar range and could not be shown as more significantly burnt out than other helping professions. Hypothesis 2 can, therefore, at best be considered partially confirmed. It would possibly be prudent to conclude that the community service doctors in KwaZulu-Natal hospitals are experiencing higher levels of depersonalisation rather than higher burnout, in general, when compared to other helping professionals.

With reference to the specific empirical objective of this research (chap. 1, sec. 1.3.2), the second objective has been addressed, namely to ascertain the level of burnout amongst the community service doctors in KwaZulu-Natal hospitals.

6.5 LEVELS OF SALUTOGENIC FUNCTIONING

In this section hypothesis 3 is tested, which states that the salutogenic functioning of community service doctors is lower than that of other helping professionals.

Descriptive statistics and normative comparisons for the four salutogenic measuring instruments are presented in table 6.11 and table 6.12 to table to table 6.15, respectively.

Table 6.11 Means and standard deviations for subscales of the four salutogenic instruments for the sample of community service doctors

	Variable	*N*	Mean	Std Dev	Minimum	Maximum
Sense of coherence	comprehension	41	54,83	14,24	28,33	85,00
	manageability	41	67,23	13,72	33,33	91,67
	meaningfulness	41	72,05	16,07	31,25	95,83
Hardiness	control	41	74,15	12,64	42,22	93,33
	challenge	41	70,78	11,32	43,75	89,59
	commitment	41	48,30	13,60	19,61	78,43
Self-control schedule	learned resourcefulness	41	66,68	10,81	30,00	82,67
Locus of control	locus of control	41	59,27	20,90	5,00	100,00

The results of table 6.11 indicate the following:

- In terms of sense of coherence, participants scored relatively higher on the meaningfulness subscale followed by manageability and comprehension.

- On the hardiness scale, participants scored, by comparison, much lower on the commitment subscale than on the control and challenge subscales.

- Participants scored moderately on both learned resourcefulness and locus of control.

Table 6.12 to 6.15 involve comparisons of the means of the present sample of community doctors against various other helping professional groups from the research literature on the salutogenic instruments of sense of coherence, hardiness, locus of control and learned resourcefulness (these groups will be defined in the footnotes below the relevant tables.)

All means and standard deviations on all the dimensions of the salutogenic instruments obtained from the research literature were scaled to measure from 0 (low) to 100 (high) to facilitate comparisons with the present sample (see chap. 5, sec. 5.4.5 for formula for transformation of scales). In cases where standard deviations were not available in the literature, they were taken as equal to the present sample so that a *t*-test could be computed (it is noted that this may affect the p-value slightly).

Table 6.12 Comparison of present sample against the two comparative (normative) samples for Sense of Coherence

	N [1]	***N*** [2]	**Mean** [1]	**Mean** [2]	**Std dev** [1]	**Std dev** [2]	***t*-value**	**1-tail p-value**
Sense of coherence	41	33	63,95	70,35] (151,4)	11,68	10,06 (17,5)	-2,53	0,01
	N [1]	***N*** [2]	**Mean** [1]	**Mean** [3]	**Std dev** [1]	**Std dev** [3]	***t*-value**	**1-tail p-value**
Sense of coherence	41	108	63,95	68,75 (148,6)	11,68	9,85 (17,15)	-2,34	0,01

[1] Present sample of community service doctors

[2] Israeli health workers sample (Antonovsky, 1987b, p. 84)

[3] Edmonton health workers sample (Antonovsky, 1987b, p. 84)

scores in brackets are scores of the comparative sample before conversion on the 0-100 scale.

The results of table 6.12 indicate the following:

- The sample of community service doctors scored far lower than Antonovsky's (1987) sample of Israeli health workers on the sense of coherence, mean difference = 6,40; *t* = -2,53; p = 0,01. This indicates that the community

doctors in this study possess less sense of coherence than the Israeli health workers (Antonovsky, 1987b). This is in accordance with hypothesis 3.

- The sample of community service doctors scored far lower than Antonovsky's (1987b) sample of Edmonton health workers on the sense of coherence, mean difference = 4,80; *t* = -2,4; p = 0,01. In this instance, the community doctors also possess less sense of coherence than the Edmonton health workers (Antonovsky, 1987b). This is in accordance with hypothesis 3.

Table 6.13 Comparison of present sample against the comparative samples for Hardiness

	N [1]	***N*** [2]	**Mean** [1]	**Mean** [2]	**Std dev** [1]	**Std dev** [2]	***t*-value**	**1-tail p-value**
Hardiness	41	448	63,87	56,17 (84,26)	10,28	10,28	4,59	0,00
	N [1]	***N*** [2]	**Mean** [1]	**Mean** [3]	**Std dev** [1]	**Std dev** [3]	***t*-value**	**1-tail p-value**
Hardiness	41	23	63,87	74,78 (112,2)	10,28	10,28	-4,08	0,00

[1] Present sample of community service doctors

[2] Sample of health care professionals (Rowe, 1997, p. 165)

[3] Sample of nurses (De Wet, 1998, p. 294)

scores in brackets are scores of the comparative sample before conversion on the 0-100 scale.

- The sample of community service doctors scored significantly higher than Rowe's (1997) sample of health care professionals on hardiness, mean difference = 7,70; *t* = 4,59; p = 0,00. The sample of community service doctors are thus more hardy than the health care professionals (Rowe, 1997). This is not in accordance with hypothesis 3.

- The sample of community service doctors scored significantly lower than De Wet's (1998) sample of nurses on hardiness, mean difference = 10,91; *t* = -4,08; p = 0,00. In this instance the sample of community service doctors are

less hardy than the nurses (De Wet, 1998). This is in accordance with hypothesis 3.

Table 6.14 Comparison of present sample against the comparative samples for Locus of Control

	N [1]	**N** [2]	**Mean** [1]	**Mean** [2]	**Std dev** [1]	**Std dev** [2]	***t*-value**	**1-tail p-value**
Locus of control	41	155	59,27	74,17 (5,94)	10,81	17,26 (3,36)	-3,43	0,00
	N [1]	**N** [2]	**Mean** [1]	**Mean** [3]	**Std dev** [1]	**Std dev** [3]	***t*-value**	**1-tail p-value**
Locus of control	41	1180	59,27	63,96 (8,29)	20,90	17,26 (3,97)	-1,42	0,08

[1] Present sample of community service doctors

[2] Sample of peace corps trainees (Rotter 1966, p. 15)

[3] Sample of Ohio State University psychology students (Rotter, 1966, p. 15)

scores in brackets are scores of the comparative sample before conversion on the 0-100 scale.

Note: the means are scaled such, that a high score shows external loc.

- The sample of community service doctors scored significantly lower (more external LOC and less internal LOC) than Rotter's (1966) sample of peace corps trainees on locus of control, mean difference = 14,90; *t* = -3,43; p = 0,00. This result is not in accordance with hypothesis 3.

- The sample of community service doctors scored similarly to Rotter's (1966) sample of psychology students, mean difference = 4,69; *t* = -1,42; p = 0,08. The result here is not significantly higher or lower, but is in the similar range to the comparative group. This result in not in accordance with hypothesis 3.

Table 6.15 Comparison of present sample against the comparative samples for Learned Resourcefulness

	N [1]	***N*** [2]	**Mean** [1]	**Mean** [2]	**Std dev** [1]	**Std dev** [2]	***t*-value**	**1-tail p-value**
Learned resourcefulness	41	260	66,68	67,35 (37,48)	10,81	11,28 (24,36)	-0,37	0,36
	N [1]	***N*** [2]	**Mean** [1]	**Mean** [3]	**Std dev** [1]	**Std dev** [3]	***t*-value**	**1-tail p-value**
Learned resourcefulness	41	23	66,68	57,79 (16,82)	10,81	10,81	3,16	0,00

[1] Present sample of community service doctors

[2] Sample of rehabilitation workers (Clanton et al, 1992, p. 135)

[3] Sample of nurses (De Wet,1998, p. 294)

scores in brackets are scores of the comparative sample before conversion on the 0-100 scale.

- The sample of community service doctors scored similarly to Clanton et al's (1992) sample of rehabilitation workers on learned resourcefulness, mean difference = 0,67; *t* = -0,37; p = 0,36. This result is not in accordance with hypothesis 3.

- The sample of community service doctors scored significantly higher than De Wet's (1998) sample of nurses on learned resourcefulness, mean difference = 8,89; *t* = 3,16; p = 0,00. This implies that the community service doctors possess more learned resourcefulness and self control than the nurses (De Wet, 1998). This result is not in accordance with hypothesis 3.

- **Interpretation**

Mean differences between the present sample and comparative sample indicate preliminary evidence for low levels of salutogenic functioning for the present sample of community service doctors.

The results in section 6.5 varied and can be summarised as follows:

- The community doctors of this study have been shown to have less sense of coherence than Israeli (Antonovsky, 1987b) and Edmonton health workers (Antonovsky, 1987b). These results support hypothesis 3.

- The community doctors of this study have been shown to have more hardiness than healthcare professionals (Rowe, 1997), which does not support hypothesis 3. The community service doctors, however, show less hardiness than nurses (De Wet, 1998), which supports hypothesis 3.

- The community doctors of this study have been shown be more external in their locus of control than peace corps trainees (Rotter, 1966) which would support hypothesis 3. They do not, however, differ from psychology students (Rotter, 1966) on locus of control. This does not support hypothesis 3.

- The community service doctors of this study have been shown to have more learned resourcefulness than nurses (De Wet, 1988) and similar learned resourcefulness to rehabilitation workers (Clanton et al, 1992), both of which do not support hypothesis 3.

The present sample of community service doctors scored significantly lower on salutogenic functioning for 50% of the analyses, similarly for 25% of the analyses and higher on 25% of the analyses; when compared to other helping professionals.

In conclusion, the results do not support hypothesis 3 to the extent that it can be considered unreservedly confirmed. Hypothesis 3 appears to be confirmed only as far as sense of coherence is concerned. As future research makes more data available on appropriate samples of health professions, further comparisons may possibly confirm the validity of hypothesis 3.

With reference to the specific empirical objective of this research (chap. 1, sec. 1.3.2), the third objective has been addressed, namely to ascertain the level of salutogenic functioning in the sample.

6.6 CORRELATION ANALYSES

Hypothesis 4 and 5 are concerned with correlations of stress and burnout with salutogenesis, while hypothesis 6 is concerned with comparing copers to noncopers on salutogenic variables. Two approaches will be used. In part one, the correlations between the individual stress scales and the individual salutogenic scales as well as the individual burnout scales and the individual salutogenic scales will be reported. Then in part 2, composite variables representing STRESS, BURNOUT and SALUTO (see section 6.6.2 for a discussion of the derivation of these composite scales) are derived and the correlations between these composite variables are reported and discussed. In this section, hypothesis 6 is also partly tested for and continues into section 6.7.

6.6.1 The relationship between stress, burnout and salutogenic functioning (part 1)

In this section, hypotheses 4 and 5 are tested, which state that the lower the level of salutogenic functioning in community service doctors, the more stress these doctors will experience; and the lower the level of salutogenic functioning in community service doctors, the more burnout these doctors will experience.

Table 6.16 indicates the correlations of stress with salutogenic functioning.

Table 6.16 Correlation of stress indicators with salutogenic functioning

Salutogenic functioning		Stress Diagnostic Survey					
		Role Conflict	Role Ambiguity	Work Overload (Quantit)	Work Overlaod (Qualit)	Career Develop-ment	Respons-ibilty for People
Sense of coherence	Comprehension	-0.23 (0,05)*	-0,09 (0,27)	-0,04 (0,41)	-0,26 0,05)*	0,09 0,29	0,26 0,05*
	Meaningfulness	-0,25 (0,06)	-0,09 (0,28)	-0,05 (0,37)	-0,15 (0,17)	-0,20 (0,10)	0,30 (0,03)*
	Manageablitity	-0,17 (0,14)	-0,07 (0,32)	-0,13 (0,22)	-0,26 (0,05)*	0,36 (0,01)*	0,27 (0,04)*
Hardiness	Commitment	-0,55 (0,00)**	-0,46 (0,00)**	-0,10 (0,25)	-0,34 (0,02)*	-0,35 (0,01)**	0,03 (0,42)
	Control	-0,16 (0,16)	-0,31 (0,02)*	-0,09 (0,28)	-0,24 (0,07)	-0,14 (0,19)	0,05 (0,37)
	Challenge	-0,22 (0,08)	-0,15 (0,18)	-0,01 (0,48)	-0,26 (0,05)*	-0,11 (0,25)	0,01 (0,48)
Self control	Learned resourcefulness	-0,15 (0,18)	-0,07 (0,34)	-0,00 (0,50)	-0,11 (0,24)	0,04 (0,41)	0,09 (0,28)
Locus of control	Locus of control	0,21 (0,09)	0,01 (0,47)	-0,07 (0,34)	0,02 (0,44)	0,14 (0,19)	0,23 (0,08)

[1]Pearson product moment correlation.

[2] 1-tailed p-value

*p<0,05 **p<0,01.

The information contained in table 6.16 indicates the following:

- With regard to the correlation between stress and sense of coherence, there is a negative significant relationship with comprehension and role conflict (p = 0,05) and with comprehension and qualitative work overload (p = 0,05). This indicates that the greater the “comprehension” the less the stress in terms of role conflict and qualitative work overload. These two findings support hypothesis 4.

- There is also a positive significant relationship between comprehension and responsibility for people. In other words, the greater the “comprehension”, the more the stress in terms of responsibility for people. This finding does not support hypothesis 4.

- With regard to manageability, there is a negative significant relationship between this variable and work overload (qualitative). This implies, that the greater the “manageability”, the less the stress in terms of qualitative work overload. This supports hypothesis 4.

- With regard to manageability and career development stress (p = 0,01) and manageability and responsibility for people (p = 0,04), there is a positive significant relationship. This indicates that the greater the “manageability”, the greater the stress for career development and responsibility for people. These findings do not support hypothesis 4.

- There is a positive significant relationship between meaningfulness and responsibility for people (p = 0,03). This indicates the greater the “meaningfulness”, the more the stress for responsibility for people. This finding does not lend support to hypothesis 4.

- With regard to hardiness, there is negative significant correlation between commitment and role conflict (p = 0,00); commitment and role ambiguity (p = 0,00); commitment and work overload qualitative (p = 0,02) and commitment and career development stress (p = 0,01). This indicates that the greater the “commitment”, the less the stress in terms of role conflict, role ambiguity, work overload qualitative and career development stress. These findings support hypothesis 4.

- Control, a dimension of hardiness was also found to have negative significant correlation with role ambiguity (p = 0,02). In other words, the more one is in control, the less the stress in terms of role ambiguity. This finding supports hypothesis 4.

- With regard to challenge, there is negative significant relationship when correlated with work overload qualitative (p = 0,05). This implies that the greater the challenge, the less stress in terms of qualitative work overload. This supports hypothesis 4.

- There were no significant relationship between learned resourcefulness and stress. This does not lend support to hypothesis 4.

- There were no significant association between locus of control and stress. This does not lend support to hypothesis 4.

▪ **Interpretation**

Few significant correlations were found between the sense of coherence subscales and the hardiness dimensions and stress. No associations were found for learned resourcefulness and stress. Likewise, no significant relationships were reported for locus of control and stress. According to these results, it is concluded that hypothesis 4 has largely not been confirmed. For future research, it is considered better to generate hypotheses around the following relationships, namely

- comprehension and role conflict, qualitative work overload and responsibility for people
- manageability and qualitative workoverload, career development stress and responsibility for people
- meaningfulness and responsibility for people
- commitment and role conflict, role ambiguity, work overloads qualitative and career development stress
- control and role ambiguity
- challenge and qualitative work overload

Furthermore, the correlation of the composite variables in table 6.27 revealed that salutogenic functioning did not correlate significantly with the composite variables of stress.

In order to answer hypothesis 5, the correlations of burnout with salutogenic functioning are determined below.

Table 6.17 investigates the relationship between burnout dimensions and salutogenic functioning.

Table 6.17 Correlation of burnout indicators with salutogenic functioning

Salutogenic functioning		**Maslach Burnout Inventory**					
		Depersonalisation		**Personal accomplishments**		**Emotional exhaustion**	
		F	**I**	**F**	**I**	**F**	**I**
Sense of coherence	comprehension	-0,11[1] (0,24)[2]	-0,26 (0,05)*	0,00 (0,49)	0,03 (0,42)	-0,10 (0,26)	-0,13 (0,20)
	meaningfulness	-0,07 (0,33)	-0,16 (0,15)	0,43 (0,002)**	0,22 (0,08)	-0,24 (0,06)	-0,05 (0,37)
	manageability	0,24 (0,07)	0,16 (0,16)	-0,10 (0,26)	0,00 (0,49)	0,22 (0,09)	0,20 (0,10)
Hardiness	commitment	-0,22 (0,08)	-0,16 (0,15)	0,21 (0,09)	-0,11 (0,25)	-0,05 (0,37)	-0,07 (0,66)
	control	0,01 (0,48)	-0,01 (0,48)	0,27 (0,05)*	0,09 (0,28)	0,08 (0,30)	0,00 (0,99)
	challenge	0,08 (0,30)	0,16 (0,16)	-0,03 (0,43)	-0,11 (0,26)	0,26 (0,05)*	0,29 (0,03)*
Self control	learned resourcefulness	-0,28 (0,04)*	- 0,31 (0,02)*	0,09 (0,29)	0,24 (0,06)	-0,08 (0,29)	- 0,05 (0,36)
Locus of control	locus of control	0,31 (0,03)*	-0,06 (0,35)	0,21 (0,09)	-0,01 (0,47)	-0,01 (0,47)	-0,02 (0,35)

[1]Pearson product moment correlation.

[2] 1-tailed p-value

*p<0,05 **p<0,01.

The information contained in table 6.17 indicates the following:

- With regard to the correlation between burnout and sense of coherence, there is a negative significant relationship with comprehension and depersonalisation intensity which is significant (p = 0,05). This indicates that the greater the "comprehension", the less burnout in terms of depersonalisation. This supports hypothesis 5.

- There is also a positive significant relationship between meaningfulness and personal accomplishment: frequency (p = 0,002). In other words, the greater the "meaningfulness" the greater the personal accomplishment. This also supports hypothesis 5.

- It should be noted that as far as the correlation between burnout and sense of coherence is concerned, that the SOC variable "manageability" does not correlate with the burnout constructs, while the burnout construct "emotional exhaustion" generally does not correlate with SOC constructs.

- With regard to hardiness, there is positive significant correlation between personal accomplishment frequency and control (p = 0,05). This implies the greater the "control", the greater the personal accomplishment. This supports hypothesis 5.

- There is also positive significant correlation between emotional exhaustion frequency and intensity (p = 0,05 and 0,03, respectively). This indicates that the greater the challenge, the greater the emotional exhaustion. This finding lends support to hypothesis 5.

- There is significant negative correlation between burnout, depersonalisation (intensity and frequency) and learned resourcefulness (self control), as would be expected by hypothesis 5. This says that the higher the level of learned "resourcefulness" (self-control), the more burnout in terms of depersonalisation. "Learned resourcefulness" does not correlate significantly with the other burnout constructs.

- There appears to be a reasonably large positive correlation between locus of control (p = 0,03) and depersonalisation frequency, but this is not in the direction as predicted by hypothesis 5. In the present study, locus of control is scored such that a high score indicates internal locus of control. A positive correlation, therefore implies that community doctors with an internal loc tend to be more inclined to burnout in terms of "depersonalisation". The correlation of locus of control and the other burnout scales are nonsignificant.

- **Interpretation**

Few significant correlations were found between salutogenic functioning and burnout in the sample of community service doctors. According to these results, it is concluded that hypothesis 5 has largely not been confirmed. For future research, it is considered better to generate hypotheses around the following relationships, namely:

- comprehension and depersonalisation
- meaningfulness and personal accomplishment
- control and personal accomplishment
- challenge and emotional exhaustion
- learned resourcefulness and depersonalisation
- locus of control and depersonalisation (predicting a positive relation)

The correlation of the composite variables in table 6.27 revealed that salutogenic functioning did not correlate significantly with the composite variables of burnout. Furthermore, *t*-test results in table 6.28 also show nonsignificant relationships between high and moderate levels of burnout and salutogenic functioning.

6.6.2 The relationship between stress, burnout and salutogenic functioning (part 2)

In this section, the single factor solutions of the burnout scales (table 6.18), the stress scales (table 6.24) and the salutogenic variables (table 6.24) are given. The factor loadings are studied and the composite variables BURNOUT, STRESS

and SALUTO derived. See section 5.4.7 for an explanation of the methodology used. The cronbach alpha values are computed and reported for each of these composite variables.

Table 6.18 Single factor solution of the burnout scales

Variable	Single factor
Depersonalisation I	0,73
Depersonalisation F	0,55
Personal accomplishment I	-0,01
Personal accomplishment F	-0,20
Emotional exhaustion I	0,78
Emotional exhaustion F	0,81

In table 6.18, all the scales have high loadings (higher than 0,25 in absolute value) on the single factors except for personal accomplishment frequency and intensity.

In table 6.19, the results for the cronbach alphas for the MBI are presented.

Table 6.19 The item analysis and cronbach alpha for the single factor of the burnout scales

Variable	Correlation with total
Personal accomplishment F	0,10
Personal accomplishment I	0,39
Emotional exhaustion F	0,49
Emotional exhaustion I	0,53
Cronbach alpha = 0,58	

The average of the four scales was calculated to attain a single total burnout score. The four scales measure on a scale from 0 to 100; the total burnout score thus also measure on a scale from 0 to 100. A frequency distribution of this variable called BURNOUT is given below.

Table 6.20 Scaling of the Maslach Burnout Inventory subscales (*N* = 41)

BURNOUT	Frequency	Percent	Cumulative frequency	Cumulative percent
40,85	1	2,4	1	2,4
44,12	1	2,4	2	4,9
45,16	1	2,4	3	7,3
49,03	1	2,4	4	9,8
49,33	1	2,4	5	12,2
50,74	1	2,4	6	14,6
51,79	1	2,4	7	17,1
54,76	1	2,4	8	19,5
55,65	1	2,4	9	22,0
57,74	1	2,4	10	24,4
58,41	1	2,4	11	26,8
59,00	1	2,4	12	29,3
59,15	1	2,4	13	31,7
61,01	1	2,4	14	34,1
61,31	1	2,4	15	36,6
61,68	1	2,4	16	39,0
61,76	1	2,4	17	41,5
62,5	1	2,4	18	43,9
62,80	1	2,4	19	46,3
63,47	1	2,4	20	48,8
63,91	1	2,4	21	51,2
65,33	1	2,4	22	53,7
65,40	1	2,4	23	56,1
65,70	1	2,4	24	58,5
66,00	1	2,4	25	61,0
67,11	1	2,4	26	63,4
67,63	1	2,4	27	65,9
68,01	1	2,4	28	68,3
68,97	1	2,4	29	70,7
69,94	1	2,4	30	73,2
71,73	1	2,4	31	75,6
72,10	1	2,4	32	78,0
73,07	1	2,4	33	80,5
73,14	1	2,4	34	82,9
73,21	1	2,4	35	85,4
73,81	1	2,4	36	87,8
74,78	1	2,4	37	90,2
76,93	1	2,4	38	92,7
78,87	1	2,4	39	95,1
78,94	1	2,4	40	97,6
83,63	1	2,4	41	100

As evident in the table above, the scores could theoretically start at 0. However, they only start at 40,8; a large enough low-burnout group, therefore, simply does not exist.

A moderate burnout group was defined as all those with scores below 61,31, and a high burnout-group as all those with scores above 67,6. The aim here is to

consider the moderate burnout group as community doctors who cope more than those in the high burnout group.

The middle group of scores (61,6 – 67,6) were left out, because the research goal was to compare two groups which were as extremely different as possible, so that if differences existed between these two groups, they could be more easily identified. If the middle group were not left out, it would reflect the same result as using mere correlations. This, together with the objective not to have either of these groups less than 15 in sample size (the aim being to get a group as low as possible on burnout but still maintain a sample size of about 15 for below 61,31 and for high burnout, at above 67), automatically determines the cut off values of 61,31 and 67,6. It is important to note that the mean on the frequency table is 63,62. It is now possible to compare these two groups (high and moderate burnout) with respect to the salutogenic constructs. Hypothesis 6 is thus tested by comparing the two burnout groups on the salutogenic variables by way of t-tests in table 6.28.

Table 6.21 presents the results of total burnout scores for each respondent in the sample.

Table 6.21 Actual scores per respondent (*N* = 41)

Record Number	BURNOUT
1	49,03
2	61,01
3	57,74
4	66,00
5	45,16
6	62,80
7	58,41
8	78,94
9	69,94
10	73,07
11	51,79
12	50,74
13	78,87
14	73,21
15	63,48
16	62,50
17	61,76

Table 6.21 (continued) Actual scores per respondent (*N* = 41)

18	54,76
19	59,15
20	65,70
21	63,91
22	74,78
23	67,63
24	71,73
25	83,63
26	72,10
27	68,97
28	59,00
29	40,85
30	49,33
31	61,31
32	65,33
33	55,65
34	65,40
35	67,11
36	76,93
37	68,01
38	73,81
39	73,14
40	61,68
41	44,12

The results of table 6.21 indicate that respondent 29 scored lowest for burnout with a total burnout score of 40,85 and respondent 25 scored the highest on burnout with a total burnout score of 83,63.

As for the burnout scales above, a single factor solution was also obtained for the salutogenic constructs with the aim of deriving a total salutogenic functioning score.

Table 6.22 Single factor solution of salutogenic functioning

Variable	Single factor
1 Sense of coherence	
Manageability	0,56
Comprehensibility	0,51
Meaningfulness	0,56
2 Hardiness	
Commitment	0,67
Challenge	0,40

Table 6.22 (continued) Single factor solution of salutogenic functioning

Control	0,56
3 Learned resourcefulness	
Self-control	0,25
4 Locus of control	
locus of control	0,45

All scales presented above have relatively high factor loadings and it was decided to create a total salutogenic scale score called SALUTO for each subject by averaging these scales. Since each one of these scales score from 0 to 100, the Scale SALUTO also scores from 0 to 100.

Next, the cronbach alpha was computed for the salutogenic scales.

Table 6.23 Item analysis and cronbach alpha for the scale SALUTO

Variable	Correlation with total
1. Sense of coherence	
Manageability	0,50
Comprehensibility	0,44
Meaningfulness	0,47
2. Hardiness	
Commitment	0,53
Control	0,47
Challenge	0,27
3. Learned resourcefulness	
self control	0,22
4. Locus of control	
locus of control	0,37
Cronbach alpha = 0,71	

Next, the same procedure was applied for the stress scales, with the aim being to attain a composite stress score.

Table 6.24 Single factor solution of the stress (SDS) scales

Variable	Single factor
Stress Diagnostic Survey	
Responsibility for people	0,49
Role conflict	0,60
Role ambiguity	0,89
Work load – quantitative	0,80
Work load – qualitative	0,70
Career development	0,37

All the SDS scales presented above have relatively high factor loadings on a single factor solution. It was decided to create a total scale score for each subject called STRESS by taking the average of all six of the SDS scales. As each of these scales score between 0 and 100, the variable STRESS also scores between 0 and 100.

Next, the cronbach alpha and item-scale correlations were established for the total scale STRESS.

Table 6.25 Item analysis and cronbach alpha for the single factor stress

Variable	Correlation with total
Stress Diagnostic Survey	
Responsibility for people	0,43
Role conflict	0,54
Role ambiguity	0,77
Work load – quantitative	0,69
Work load – qualitative	0,60
Career development	0,35
Cronbach Alpha = 0,79	

Table 6.26 presents basic data for the three composite variables calculated. In tables 6.26 and table 6.27, the number of hours worked per week was included as an indication of workload. This variable was called HOURS WORKED PER WEEK.

Table 6.26 Descriptive statistics of the composite variables

Variable	*N*	Mean	Std dev	Min	Max
STRESS	41	43,31	13,09	18,89	70,56
SALUTO	41	64,16	8,29	45,35	76,88
BURNOUT	41	63,62	10,05	40,85	83,63
HOURS WORKED PER WEEK	41	58,59	13,32	20,00	88,00

In table 6.26 above, the descriptive statistics of the four composite variables are given.

Table 6.27 below presents correlations between the composite variables.

Table 6.27 Pearson correlation coefficients between composite variables and number of hours worked per week

Composite variable	STRESS	SALUTO	BURNOUT	HOURS WORKED PER WEEK
SALUTO	-0,15 (0,17)	1,00 (0,00)	0,11 (0,25)	-0,25 (0,06)
BURNOUT	0,45 (0,002)**	0,11 (0,25)	1,00 (0,00)	0,16 (0,16)
HOURS WORKED PER WEEK	0,33 (0,02)*	-0,25 (0,06)	0,16 (0,16)	1,00 (0,00)

1 Pearson product moment correlation.
2 P-value are given in brackets below correlations
*p<0,05 **p<0,01.

According to table 6.27, the following significant relationships are evident:

- stress and burnout (p = 0,002)
- stress and hours worked per week (p = 0,02)

No significant relationships were found between STRESS and SALUTO and between BURNOUT and SALUTO. Hypotheses 4 and 5 could thus not be confirmed.

- **Interpretation**

In table 6.27, a significant relationship exists between stress and hours worked per week. This confirms the literature review finding that long working hours are a crucial aetiological variable in the experience of stress and burnout (see chaps. 2 & 3).

Significant relationship was found between stress and burnout. This confirms the literature review report that stress has a direct positive relationship with burnout, as stress is an antecedent to burnout. (See integration of the literature review findings at the end of chap. 4.)

However, from the above correlation matrix (see table 6.27), it is clear that the composite variable of salutogenic functioning (SALUTO) does not correlate significantly with the other composite variables of stress and/or burnout. This is contrary to the literature review findings that salutogenic functioning is negatively related to the experience of stress and burnout, where higher scores on salutogenic functioning is generally related to lower scores on stress and burnout (see integration of the literature review concepts at the end of chap. 4). This signifies that no matter what groups one might make on the basis of STRESS (stress) and BURNOUT (burnout), when these groups are compared to SALUTO (salutogenic functioning), no differentiation is likely to be found. This finding is also verified by the correlation tables in section 6.6.1 where only few significant relationships were found between the individual subscales of stress, burnout and salutogenic functioning. The *t*-tests in section 6.7 also indicate no significant relationships between the moderate and high burnout groups and salutogenic functioning. Possible reasons for this lack of significant relationship between salutogenic functioning, and stress and burnout are presented in the integration of the empirical study in section 6.8.

From these results, the fourth and fifth hypotheses of this research (chap. 5, sec. 5.5) were not confirmed. It can be concluded that stress scores (hypothesis 4) and burnout scores (hypothesis 5), in general, cannot differentiate between salutogenic functioning in community service doctors.

With reference to the specific empirical objective of this research (chap. 1, sec. 1.3), the fourth and fifth objective has been addressed, namely to determine the relationship between stress and salutogenic functioning and burnout and salutogenic functioning amongst community service doctors in KwaZulu-Natal hospitals.

6.7 DIFFERENTIATING BETWEEN COPING AND NONCOPING

The following results are presented in an attempt to address the sixth empirical objective of this research, that is, to ascertain the differentiation between coping and noncoping in salutogenic terms.

The *t*-test results for the salutogenic scales when compared to the high and moderate burnout groups are tabled next. Details of how burnout groups were categorised into high and moderate groups are presented in table 6.20 in section 6.6.2.

Table 6.28 Comparison of salutogenic scales against high and moderate burnout groups

Variable	Burnout group	*N*	Mean	Std dev	Variance	*t*	Df	1-tailed p-value
Comprehension	High	15	52,77	18,75	Unequal	-0,66	23,5	0,26
	Moderate	15	56,55	11,76				
Manageability	High	15	65,00	12,23	Unequal	0,13	26,2	…
	Moderate	15	64,31	15,94				
Meaningfulness	High	15	70,97	14,21	Unequal	-0,25	25,7	0,41
	Moderate	15	72,50	19,29				
Commitment	High	15	72,30	14,42	Unequal	-0,24	27,1	0,40
	Moderate	15	73,48	12,04				
Control	High	15	69,86	11,70	Unequal	0,22	27,9	…
	Moderate	15	68,88	12,56				
Challenge	High	15	48,10	15,16	Unequal	0,42	27,7	…
	Moderate	15	45,88	13,76				
Self-control	High	15	68,62	6,84	Unequal	0,69	19,8	…
	Moderate	15	65,73	14,75				
Locus of control	High	15	56,00	18,13	Unequal	-0,49	25,0	0,32
	Moderate	15	60,00	25,98				

… p value not in the direction hypothesised and cannot be considered logically significant since the high burnout group in these instances score higher on the salutogenic variable than the moderate burnout group.

According to table 6.28, in the last column ("1-tailed p-value"), it is evident that none of the values come even close to 0,05.

- **Interpretation**

These nonsignificant results in table 6.28 were to be expected, because the correlations of stress and burnout were found to be nonsignificant with salutogenic functioning in the section 6.6.1 above (see also correlation matrix, table 6.27). If the assumption that the two groups established for burnout (high and moderate) are equated to "noncopers" and "copers", then it follows that copers are not different from noncopers as far as the salutogenic functioning is concerned.

This finding is contrary to the literature review, which suggests that salutogenic constructs have the ability to act as coping mechanism in the face of stress and burnout. (See chap. 4 and integration of literature review concepts at the end of chapter 4.)

Possible reasons for this inability of salutogenic constructs to differentiate between copers and noncopers will be presented in the empirical integration in section 6.8.

From these results, the sixth hypothesis of this research (chap. 5, sec. 5.5) was not confirmed. It can be concluded that salutogenic functioning scores cannot differentiate between copers and noncopers in community service doctors.

With reference to the specific empirical objective of this research (chap. 1, sec 1.3), the sixth objective has been addressed, namely to ascertain the differentiation between coping and noncoping in salutogenic terms.

6.8 INTEGRATION OF EMPIRICAL FINDINGS

The results of the research have been presented above. With reference to chapter 1, section 1.7.2, phase 2, step 6, the empirical findings will now be integrated.

6.8.1 Empirical objective 1

The results (see sec. 6.3) identified that the present sample of community service doctors is experiencing moderate levels of stress, when measured by the Stress Diagnostic Survey. When the community service doctors were compared to a sample of other helping professionals, significantly high stress levels were identified for role ambiguity, work overload (quantitative) and career development stress as measured by the Stress Diagnostic Survey.

Career development stress was reported as the highest stressors for the sample of community service doctors in KwaZulu-Natal hospitals. According to Grobler and Hiemstra (1998, p. 22), career development stress which involves the impact of over-promotion, under-promotion, lack of job security, thwarted ambition and conflict arising from lack of career opportunities, is a definite source of stress in the medical profession.

This literature review finding was also confirmed by the comparative analysis, which indicates that career development stress was significantly high in community service doctors when compared to the ministerial sample. This finding makes sense in light of the fact that community service year is the final year of a South African medical doctor's formal compulsory training and these trainees were at a point of being free to pursue other options available to them. Furthermore, compulsory community service was suddenly, unilaterally imposed upon this sample by the government. The discontent that arose out of their original career plans being disrupted could also account for the high levels of career development stress.

Career development stress for the comparative sample would be expected to be low, since the career of a minister is relatively “one-dimensional”, without much scope for “advancement”, compare to the conventional career.

This lack of professional career paths to motivate doctors and recognise their merits, has been cited as contributing to discouragement, demoralisation and eventually burnout (Pines & Aronson, 1988). This source of stress also makes sense in light of the growing number of South African junior doctors who opt for emigration after completing their medical training.

Responsibility for people was considered the second highest stressor for the community service doctors. However, this result, when compared to the ministerial sample was significantly lower. The responsibility for people as a highest stressor in the comparative sample is understandable since caring for people forms the very core of ministerial work. In the context of ministerial work, this may even be considered a so-called “social desirability” effect of the results. However, although responsibility for people was not significant in comparison to the ministerial sample, it should be acknowledged as an important stressor since it was considered to be significant for the community service doctors themselves. This confirms the literature finding that the taking of specific responsibility for peoples’ lives is a serious source of stress for medical doctors. According to Parsons (1999, p. 7), junior doctors are expected to live with the terrible fear of making a mistake that will cause accidental death or premature damage. The emotional cost of caring, associated with taking responsibility for people, includes imparting bad news to patients and loved ones, inflicting pain through tests or treatment, and dealing with death and dying (Ullrich & Fitzgerald, 1990). Such responsibility for people has a finality shared by few other professions (Payne & Firth-Cozens, 1987).

The responsibility for people associated with the helping professions has been linked to the concepts of emotional exhaustion and depersonalisation of burnout. According to Maslach (1982b), burnout is common in helping professions because of the high level of arousal as a result of direct, frequent and intense interactions with recipients. This has been verified by the empirical finding of this research,

which indicates that the sample experienced high levels of emotional exhaustion and associated depersonalisation, as measured by the MBI in section 6.4.

Qualitative and quantitative work overload were significant stressors in the moderate category for the sample of community service doctors in this study. Work overload (quantitative) was significantly high for the community service doctors when compared to the ministerial sample. This finding was in keeping with the literature, which indicated that work overload and its effect on home life is the most commonly reported source of job stress amongst hospital consultants (Graham & Ramirez, 1997, p. 228). According to Lingenfelser et al (1994, p. 566), physical exhaustion, sleep deprivation, cognitive functioning and mood status are all factors associated with quantitative work overload. It is sensible to assume that work overload is directly equated to long working hours. Further confirmation of quantitative work overload being significant stressors for community service doctors is indicated by the positive correlation between stress and number of hours worked in table 6.27 - indicating that long working hours are a crucial aetiological variable in the experience of stress. Related to this, the Interim National Medical and Dental Council cited in Reid et al (1999, p. 768), suggest that many medical graduates felt unprepared by their undergraduate training for independent practice, especially in rural areas where they felt pressurised into doing procedures that were beyond their capacity.

Role ambiguity and role conflict also appeared significant stressors in the moderate and low stress categories for the sample of community service doctors in this study. Role ambiguity was also significantly high for the community service doctors when compared to the ministerial sample. The position of community service doctor was for the first time introduced into the hospital structure when this research was conducted; it is thus expected that there will be confusion as to the clarity of one's role as a community service doctor. This confirms the literature review finding that there is a consistent relationship between role demands in the form of role ambiguity (lack of clarity about one's job), role conflict (conflicting job demands), and stress and burnout in the medical profession (Cordes & Dougherty, 1993; French & Caplan, 1980; Grobler & Hiemstra, 1998; Ivancevich & Matteson, 1980; Khan et al, 1964).

6.8.2 Empirical objective 2

The results (see sec. 6.4) suggest that the sample of community service doctors in KwaZulu-Natal hospitals are experiencing high levels of burnout as measured by the Maslach Burnout Inventory: depersonalisation frequency and intensity - high, personal accomplishment frequency and intensity – moderate to low, emotional exhaustion frequency and intensity – moderate to high. These results were especially significant for two scales namely, depersonalisation frequency and intensity, which indicated significantly high levels of burnout for the present sample as compared to the general helping professions. No significant difference was found for the emotional exhaustion and personal accomplishment scales, indicating that the present sample scored in the similar range when compared to the general population of helping professional as reported by Maslach and Jackson (1981).

This empirical finding of high levels of burnout, especially for depersonalisation, in the sample of community service doctors confirm the literature suggestion that the practice of medicine is increasingly recognised as having many stressful aspects with potentially negative consequences for physicians' health and wellbeing (McCranie & Brandsma, 1988, p. 30). Some common stressors intrinsic to daily medical practice include continually having to confront intensely emotional aspects of human experience (eg suffering, fear, sexuality and death), dealing with "difficult" patients and making serious clinical decisions on the basis of often conflicting, ambiguous or incomplete information, and long working hours (McCue, 1986). According to Schweitzer (1994, p. 352), a national survey of junior doctors in 1993 indicated that 77,8% of junior doctors in South Africa had suffered symptoms consistent with burnout.

Another sign of high levels of burnout in the medical profession are the startling consequences of burnout in medical doctors as revealed by the following statistics: doctors have twice as many road accidents as the general population; are three times more likely to have cirrhosis or commit suicide than the general population; are at least 30 times more likely to be addicted to drugs; are two and half times more likely to be admitted to psychiatric hospital and have a high

incidence of unresolved marital conflict and emotional problems (Ellis, 1996a, p. 299; Near et al, 1980; Sonneck & Wagner, 1996, p. 255).

According to Maslach and Jackson (1981), emotional exhaustion is considered to be a key aspect of the burnout syndrome. As emotional resources are depleted as a cost of caring, workers feel that they are psychologically and emotionally depleted of resources. In keeping with this literature finding, the majority of the community service doctors in this sample reported moderate to high emotional exhaustion frequency and intensity - an indication that the sample were depleted of emotional resources to cope with the demands of caring. However, when compared to the general population of helping professions as reported by Maslach and Jackson (1981), the present sample of community service doctors scored in the similar range and not higher than this norm group.

The majority of the sample of community service doctors reported moderate to low personal accomplishment (and similarly when compared to the norm group). According to the literature, reduced personal accomplishment refers to a decline in one's feeling of competence and successful achievement in one's work (Maslach, 1982a). This moderate to low personal accomplishment, in the light of the significantly high levels of depersonalisation in the sample, are consistent with the literature that high levels of depersonalisation diminish the worker's sense of personal accomplishment as the work loses its meaning (Van Dierendonck et al, 1994, p. 89). This was verified by the positive significant correlation of person accomplishment frequency and meaningfulness in table 6.17.

6.8.3 Empirical objective 3

According to the results (see sec. 6.5), community service doctors in KwaZulu-Natal hospitals are experiencing varied levels of salutogenic functioning as evident by: sense of coherence functioning being significantly lower than both norm group comparisons; hardiness functioning being significantly high for the first comparative group and significantly low for the second comparative group; locus of control being similar to the first comparative group and significantly lower for the

second comparative group and learned resourcefulness being significantly higher for the first comparative group and similar to the second comparative group.

In summary, this group, when compared to normative samples and comparative research groups indicate: low salutogenic functioning for 50% of the analyses; moderately for 25 % of the analyses and high on 25% of the analyses.
Folkman et al (1986, p. 578) report that personality variables, together with appraisal and coping have a significant relation to psychological symptoms. The criteria for what constitutes a “healthy personality” include dispositions that have the cognitive appraisal effect of rendering the events as not so meaningless, overwhelming and undesirable, and the action effect of instigating coping activities that involve interacting with and thereby transforming the events into less stressful forms rather than avoidance (Lazarus, 1966; Kobasa, Maddi & Khan, 1982, p. 169).

From the significantly low sense of coherence levels, this sample may be experiencing difficulty with regards to comprehending (making sense of the stimuli in the environment), managing (coping with the stimuli with available resources), and finding meaning in their work (identify emotionally with events). This possibility of not having sufficient “generalised resistance resources” (Antonovsky, 1979, p. 99) to ensure successful tension management is confirmed by the high levels of reported stress and depersonalisation burnout reported by the sample of community service doctors. In addition, the significant correlation of personal accomplishment on the burnout measure and meaningfulness in table 6.17, questions the extent to which the community service doctors are finding meaning in their work.

With regard to hardiness, there is uncertainty (comparative analyses reveal a 50/50 possibility) as to whether the community service doctors are viewing situations as meaningful and interesting (commitment), seeing stressors as malleable (control) and construing difficulties as challenges (challenge). Kobasa, Maddi and Khan (1982) found that a hardy personality disposition was prospectively linked to fewer reported illnesses and symptoms, and demonstrated that hardiness functions as a resistance resource in buffering the effects of

stressful events. In light of the high stress and depersonalisation burnout scores, it is reasonable to assume that the community service doctors were less hardy and possessed less resistance resources in buffering the effects of their work stress.

With regard to their similar to low scores on locus of control leaning towards external control, the community service doctors may be expected not to display the generalised personality orientation that plays an important role in buffering the stress-illness relationship (Antonovsky in Cooper & Payne, 1991, p. 70). According to Leiter (1991, p. 141), individuals who score high on locus of control (internals) are expected to use cognitive and action control strategies to address difficulties at work; they tend to be less exhausted and to have more positive assessment of their personal accomplishments. On the other hand, external locus of control implies a learned helplessness and has been directly linked to burnout (Cooper & Payne. 1991, p. 136; Ellis, 1996a; Hurrel & Murphy, 1991; Kobasa, 1979a). The high levels of stress and depersonalisation burnout reported by the sample have confirmed this literature finding.

Finally, with regard to the similar to high scores on learned resourcefulness, individuals in the sample are expected to use more effective coping methods and to have greater trust in their ability to control their emotions and cognitions when faced with stressful events than low resourceful individuals.

In conclusion, this sample scored high on stress, scored high on depersonalisation burnout and scored low on half of the salutogenic functioning analyses. The hypotheses for empirical objective one, two and three were thus not unequivocally confirmed. The empirical findings only partly confirm the general literature report that individuals scoring low on salutogenic variables, tend to use regressive coping in favour of transformational coping, which in turn, increases illness both at the main effect and at a buffer level (Antonovsky, 1982; Kobasa & Puccetti, 1983; Maddi, 1990; Rosenbaum, 1988; Rotter, 1966). The relationship between stress, burnout and salutogenic functioning was further explored in empirical objective 4, 5 and 6.

6.8.4 Empirical objective 4 and Empirical objective 5

From the results in section 6.6, there are only few significant relationships between levels of stress and salutogenic functioning, and few significant relationships between burnout and salutogenic functioning in the sample of community service doctors in KwaZulu-Natal hospitals. Significant relationship was found between stress and burnout (because of this correlation between stress and burnout, it is now possible to refer to these variables as stress/burnout for the sake of simplification). This confirms the literature review findings that stress has a direct positive relationship with burnout, as burnout is considered to be a prolonged stress reaction (Maslach, 1982a).

According to the literature, salutogenic functioning is negatively related to the experience of stress and burnout, where higher scores on salutogenic functioning is generally related to lower scores on stress and burnout (Antonovsky, 1982; Kobasa & Puccetti, 1983; Maddi, 1990; Rosenbaum, 1988; Rotter, 1966). This literature premise is based on the expectation that the salutogenic properties act as generalised resistance resources and have buffering effects on stress and burnout. However, in the sample of community service doctors, only few significant correlations were found between the individual dimensions of salutogenic functioning and the stress and burnout subscales. No significant association was indicated for the composite variables of salutogenic functioning and the composite variables of stress and/or burnout. This lack of significant relationship between stress/burnout and salutogenic functioning does not replicate the literature findings, which maintain otherwise. Possible reasons for this variation are presented below.

6.8.5 Empirical objective 6

From the results presented in sections 6.6 and 6.7, it was concluded that salutogenic functioning scores cannot differentiate between copers and noncopers in community service doctors in KwaZulu-Natal hospitals. This finding was anticipated, because, according to the results in empirical objective 4 and 5 above, no relationship was found between stress/burnout and salutogenic functioning.

From the literature review, salutogenic personality constructs were reported to act as coping mechanism in the face of stress and burnout (see chap. 4, sec. 4.4). The burned out personality was expected to be negatively related to the profile of the coper where better salutogenic functioning is related to coping and poor salutogenic functioning to noncoping or burning out (see discussion on empirical objective 3 & 4 above). Thus, the empirical results presented in section 6.7 contradict this literature finding.

From this, it can be concluded that personality as a variable did not play as important a role in differentiating between stress and burnout as predicted.

Possible reasons why there was no significant relationship found between stress/burnout and salutogenic functioning and possible reasons for the inability of salutogenic constructs to differentiate between copers and noncopers are presented as follows:

- The mere presence or absence of burnout and stress symptoms (in the form of high or low scores on these variables) may not be sufficient to explain the individual's functioning.

- Quantitative analysis is restrictive in obtaining the full picture of the complexities of an individual's functioning. Possibly entering the life world of the individual could have proved more valuable than relying on quantitative measures alone. Cordes and Dougherty (1993) indicate that qualitative research could be valuable in future studies on burnout.

- Variables other than personality could have accounted for the variance in coping with stress and burnout. One possible reason is that the influence of the environment could have had a substantially greater effect on the respondent's ability to cope with stress and burnout, thus outweighing the effect of the personality on coping.

This has been reiterated by leading burnout theorists. Maslach (1978, p. 114) states: "The search for the causes of burnout is better directed away from identifying the bad people and toward uncovering the characteristics of the bad situation where many good people function." This viewpoint emphasises the central role of situational factors in understanding burnout (Farber, 1983b, p. 5). Pines and Aronson (1988, p. 51), in their analysis of the causes of burnout, have focused on the environment, not because individual differences are unimportant, but because almost all individuals can be affected by environmental changes, regardless of their personality characteristics or cognitive styles. The literature suggests that the complete environment (occupational, organisational, socio-political, home and recreational environments) has more practical utility in understanding burnout than concentrating on the individual's intrapsychic experience (Antonovsky & Sagy, 1986, p. 223; Golembiewski & Roundtree, 1986; Pines & Aronson, 1988). Carroll and White (1982, p. 60) add the following: "Staff burnout simply stated is not an individual disease. Nor is it due only to negative environmental conditions. It is an ecological dysfunction and must be dealt with as such."

Furthermore, the subjective experiences of an individual in terms of physical, psychological and social functioning, always play a moderating role in the relationship between cause effect analyses. (See the transactional models of stress and coping in chapters 2 and 4, for details on the multivariate nature of stress and coping.)

- To seek the association of burnout and salutogenic constructs is difficult, because each is located in the opposing paradigms of pathogenesis and salutogenesis.

- The sample size of this research was small, $N = 41$. Small sample sizes lack statistical rigour. Gilbar (1998, p. 48) indicates that the small sample size does not reduce the importance of the findings, but points rather to the necessity for further research in this aspect of burnout and salutogenesis.

Often an important variable may not correlate with other variables, because the range is too restricted or because the scores are too homogenous. Generally, individuals who share a similar world-view tend to voluntarily participate in research studies (Hurrell et al in Cooper & Payne, 1991). This could have prompted them to choose similar responses in the psychometric questionnaires.

- The literature indicates that concepts such as stress, burnout, coping and personality are conceptually diverse and mean different things to different observers. This lack of definitional clarity and consensus has been the greatest limitation in the advancement of sound empirical testing at the theoretical and methodological levels (Ratliff, 1988, p. 153; Shinn, Rosario, Morch & Chestnut, 1981, p. 69).

This concludes step 6 of the empirical study.

6.9 CHAPTER SUMMARY

The results of the empirical study were reported, interpreted and integrated in this chapter. The results of the six empirical objectives are the following:

(1) The level of stress amongst community service doctors in KwaZulu-Natal hospitals was found to be moderate as measured by the Stress Diagnostic Survey classification system and high when compared to a sample of helping professionals.

(2) The level of burnout amongst community service doctors in KwaZulu-Natal hospitals was found to be higher than for the general helping professions for depersonalisation.

(3) The level of salutogenic functioning amongst community service doctors in KwaZulu-Natal hospitals was found to be low especially for sense for coherence functioning when compared to other helping professionals.

(4) Few significant relationships were found between levels of stress and salutogenic functioning and few significant relationships were found between levels of burnout and salutogenic functioning, thus stress and burnout scores in general were unable to differentiate between salutogenic functioning in community service doctors in KwaZulu-Natal hospitals.

(5) Salutogenic functioning scores were unable to differentiate between copers and noncopers in community service doctors in KwaZulu-Natal hospitals.

(6) Recommendations based on the literature and empirical findings of this research with regard to future research, training and development of community service doctors in KwaZulu-Natal hospitals will be addressed in chapter seven.

In addition to the above objectives, this chapter also reported on the biographical profile of the sample, and the reliabilities of the measuring instruments employed in the research.

- **REMARK**

With reference to the empirical objectives of the research in chapter 1, section 1.7.2, phase 2, steps 5-6, the results of the six empirical objectives have been addressed.

The next chapter will look at the conclusions and limitations of this research. Recommendations will be made with reference to the literature and empirical objectives of this research.