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CONTENTS

Editorial:

Prof. Dr. J. Frantz (PhD).....	i
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RESEARCH PAPERS

1. AN INVESTIGATION INTO THE INTER-RATER RELIABILITY OF ULTRASOUND IMAGING OF ABDOMINAL MUSCLES IN ADULTS F Alston, C Britz, T Du Preez, S Mthembu, C Pavon, N Pells, M Sarembock, J Hughes & J Jelsma	1
2. THE EFFECTS OF A SHORT TERM PHYSICAL ACTIVITY INTERVENTION PROGRAMME ON BODY MASS INDEX, BLOOD PRESSURE, AND PERCENTAGE BODY FAT AMONG HIGH SCHOOL LEARNERS T Pillay & JM Frantz	13
3. EXPLORING AND CURBING THE EFFECTS OF HIV/AIDS ON ELDERLY PEOPLE IN UGANDA A Nankwanga, J Phillips & N Stella	19
4. PERCEPTION AND ATTITUDES OF HEALTH PROFESSIONALS TOWARDS PEOPLE WITH PHYSICAL DISABILITIES IN HOSPITALS IN THE WESTERN CAPE N Mlenzana, M Bezuidenhout, L Nickel, A Jacobs, M Manzoni, J Smith, & L Van Der Linde	31
5. THE RELATIONSHIP BETWEEN HEALTH RISK BEHAVIOUR AND PHYSICAL ACTIVITY AMONG HIGH SCHOOL LEARNERS IN THE MTWARRA REGION, TANZANIA H Pharaoh & E Nannyambe	37
6. MUSCULOSKELETAL PAIN IN HAIRDRESSERS—A STUDY IN DURBAN T Puckree	45

SCHOLARY PAPER

7. WRITING A CASE REPORT FOR PUBLICATION J Frantz	52
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ERRATUM

8. OBESITY IN CHILDREN OF TENNESSEE L Weise & D Wilson	56
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Editorial

Sport for development is a complex and diverse phenomenon. Sport is important because it is a vital element in the health, happiness and well-being of people across all ages. The Faculty of Community and Health Sciences at the University of the Western Cape has accepted the challenge of ensuring that the importance of sport as a tool for development is highlighted in South Africa. The Faculty will thus be launching its “Interdisciplinary Centre of Excellence for Sport Science and Development” early in December 2009. The center under the guidance of Prof M Keim-Lees will be adhering to the following mission:

- To conduct productive research activities relating to Sport Science and Development
- Teach and train the next generation of sports leaders
- Provide high performance sports services
- Pursue community outreach

It is thus with this in mind and the euphoria of the Soccer World Cup that the journal would like to invite all researchers in the areas of “Sport Science and Development” to submit articles for consideration in 2010.

Prof José Frantz



The JCHS is a peer reviewed journal, published bi-annually. It covers a wide interest in community and health science related topics. The features that make JCHS so unique are:

- *it offers a platform for debate between various disciplines which is essential in helping us to understand and learn from each other.*

- *the editorial team encourage original research but support the publication of scholarly papers and scientific systematic reviews.*

- *it offers a platform for novice researchers to share their research findings. The editorial team offers a platform for novice researchers to share their research findings and offers “hands on” assistance with academic writing skills. We thank all the authors for submitting their work for publication and trust that, you, the reader, will find it interesting and gain knowledge from their publications and will want to feel part of the team by submitting your work for publication.*

Prof. Jose Frantz

Editor

Journal of Community and Health Sciences (JCHS)

AN INVESTIGATION INTO THE INTER-RATER RELIABILITY OF ULTRASOUND IMAGING OF ABDOMINAL MUSCLES IN ADULTS

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ABSTRACT

Background:

Ultrasound imaging is a non-invasive tool that could be useful in observation of bodily structures, diagnostic purposes, bio-feedback and as an outcome measure. As core stability has become a focal point in rehabilitation, the ability to observe the muscles involved could prove to be clinically useful.

Aim:

This study was therefore conducted to determine the inter-rater reliability of the ultrasound imaging machine.

Methods:

Rectus Abdominus (RA), External Obliquus (EO), Internal Obliquus (IO) and Transversus Abdominus (TrA) were imaged in both a relaxed and a contracted condition. Fifty one participants of thirty years and older were recruited from visitors to a tertiary hospital. Two investigators independently measured the thickness of the abdominal muscles.

Results:

Generally there was a strong relationship when measuring RA, IO and EO, although strong contractions did not meet the criteria set for reliability. RA relaxed had the strongest correlation between raters ($r=0.89$, $p<0.01$) while IO oblique crunch (OC) showed the weakest correlation ($r=0.58$, $p<0.01$). A significant difference was found in thickness from the relaxed state to measuring EO hollowing-in-manoevre (HI) ($p=0.02$), Oblique Crunch ($p<0.01$) and RA chin-to-chest ($p<0.01$). Generally, males showed a significantly larger muscle thickness compared to females and a high Body Mass Index (BMI) was associated with unclear images ($p<0.01$).

Conclusion:

The use of the ultrasound imaging machine results in reliable measurement regarding the more superficial muscles in a state of relaxed or moderate activity, even when used by relatively inexperienced therapists. It is recommended that US can be used as a reliable outcome measure of most abdominal muscle activity.

KEY WORDS:

Abdominal muscles, Muscle Thickness, Reliability, Ultrasound Imaging.

Introduction

Ultrasound imaging is fairly new in the rehabilitation sector and it is a useful clinical tool as it allows observation of muscles as they contract (Whittaker, 2004) while providing biofeedback to patients (Bunce, Hough and Moore, 2004). It is an unobtrusive method which permits observation of muscles that are deep and difficult to assess

(Whittaker, 2004). Physiotherapists are incorporating 'core stability' into rehabilitation and with the shift of focus onto the importance of abdominal muscles, especially Transversus Abdominis (TrA), ultrasound imaging could play a pivotal role in this sector (Teyhen et al., 2005).

The abdominal muscles are important for lumbar

spine and pelvic movement and with activation prepare the spine for loads that will be placed upon it (Cholewicki and Van Vliet, 2001 and Rankin, Stokes and Newman, 2006). The abdominal muscles, from superficial to deep, are Rectus Abdominus (RA), being the thickest at rest; External Obliquus (EO) at 5.9mm; Internal Obliquus (IO) at 9.3mm; and TrA at 5.1mm (Gray, 2002 and Rankin et al., 2006 and Urquhart et al., 2004 and Critchley and Coutts, 2002). According to Watanabe et al. (2004), when using ultrasonography, the thickness of erector spinae decreases during lumbar flexion and increases during extension, indicating a possible link between muscle contraction and muscle thickness. Rankin et al. (2006) found that males have significantly thicker abdominal muscles than females and there is a poor correlation between age and muscle size.

The "gold standard" for assessment of muscle size changes are CT and MRI scans which are time consuming, highly expensive and not always easily obtainable (Bemben, 2002). Ultrasound (US) technology which is more cost effective, safe to use and less time consuming has advanced and can view images of superficial and easily accessible muscles just as accurately as MRI (Bemben, 2002). It is now becoming a popular diagnostic tool and uses high frequency sound waves to provide a visual image of bodily structures which can be captured instantaneously (Wink et al., 2006 and Teyhen et al., 2005). Images can then be stored on the computer and measured at a later stage (Bunce et al., 2004).

For any instrument to be useful it must be valid and reliable. To be valid it should measure what it is supposed to measure and to be reliable it should give consistent results when it is repeated on the same participant under similar conditions (Lwanga, Tye and Ayeni, 1999). Inter-rater reliability implies that the instrument gives similar results when used by different therapists on the same individual.

A study by Sherburn et al. (2005) investigating transabdominal real-time US, aimed to establish the reliability of measurements between raters and between testing occasions. It was found that the intra- and inter-rater reliability was satisfactory and therefore application of diagnostic US was both valid and reliable (Sherburn et al., 2005). In

this study, participants were tested in crook-lying (Sherburn et al., 2005). This position is appropriate as the task is performed at low load, which is essential for measurement of muscle activity using US imaging (Ferreira, Ferreira and Hodges, 2004).

The resting measure was captured at the end of quiet expiration followed by the activation measure (Kiesel et al., 2006). According to Whittaker (2007), breathing seems to have an effect on the thickness of the abdominal muscles as during inspiration the diaphragm pushes the abdominal contents into the abdominal muscles, making them longer and thinner, with the opposite occurring during expiration.

Limitations of US imaging are that it only gives a two-dimensional view of the muscle and the small view field influences the accuracy of measuring muscle thickness (Whittaker, 2006 and Hides et al., 2006). In testing voluntary activation of the abdominal muscles, various factors such as motivation and skill learning of the participant can affect the outcome of strength and endurance measures (Ferreira et al., 2004). Therefore assessment would be more accurate if it involved measurement of activity in an automatic task (Ferreira et al., 2004).

As highlighted above there are few studies that look at the reliability of US imaging in observing abdominal muscle thickness, particularly in older adults. In addition, there are few therapists in South Africa who are familiar with this technology and it is of interest therefore to establish the inter-rater reliability of US imaging when used on adult abdominal muscles by relatively researchers who have had no prior experience with US.

Objectives

- To determine the inter-rater reliability of US imaging
- To establish a database of "normal" values for relaxed and contracted abdominal muscle thickness in participants aged 30 years and older to be used as a base for further studies.
- To identify whether body mass index affects the reliability of measurement.

Hypothesis

There is a significant difference and no correlation between the measurements taken by two investigators using US imaging when measuring the thickness of abdominal muscles in adults of 30 years and older.

Methodology

This study used a correlational analytical quantitative research design. A sample of convenience was used as participants were recruited from passersby in the main thoroughfare of the tertiary hospital. The subjects had to be 30 years and older and were excluded if they were hospital patients, or had any of the following conditions:

- Physical disability and congenital deformities of the trunk and/or pelvic region
- Abdominal surgery involving incision of the abdominal muscles including Caesarian Section
- History of stroke
- Pelvic fractures
- Postpartum complications
- Spinal cord injury

Using SPSS Version 8, it was determined that a sample size of 20 is required to detect a correlation of 0.6 with $p=0.05$ and 80% power, and this number was exceeded.

Instrumentation

All participants completed a questionnaire to identify any exclusion criteria. Weight was measured in kilograms (kg) using a scale and height in meters (m) using a tape measure fixed to the wall. A goniometer placed on the lateral epicondyle of each participants knee was used to standardize the angle of knee flexion at ninety degrees. IN order to ensure that images were taken over the same area, the points on the abdomen, where the US transducer was placed were measured using a tape measure and marked with a whiteboard marker.

A Siemens® Accusonic X150 US imaging machine with a 5.5cm wide band linear array frequency of 5Hz was used to capture B-mode (2-D) real-time images of the four abdominal muscles. Conductive gel was

used between the transducer and the skin. The researchers underwent training in the operation of the US machine, followed by practice sessions and a pilot study. The length of the image field was measured using a ruler and the half point marked at the top and bottom of the screen. A piece of thread was attached to these points in order to standardize where the calipers were placed on the image.

Procedure

Approval was obtained from the University of Cape Town Research Ethics Committee and permission from the relevant authorities. A pilot study was conducted using ten participants. It aimed to investigate the positions at which the transducer should be placed, the movements to be performed by the participants, the relevance of the questionnaire, the time allocation for each participant and how the data should be captured. Data collection was done over four days. Participants were recruited by two of the seven researchers who approached those persons passing by the testing area that appeared to fit the inclusion criteria. The investigator introduced herself, gave an overview of what the study entailed and asked if the person was willing to participate. Two different investigators then gave a detailed description of the study and what was required of participants. If willing, they signed a consent form and completed the questionnaire, all of which were in English and Xhosa. Weight was measured using a digital scale, the height was taken by using a wall mounted tape measure, and waist circumference and hip circumference were obtained using a tape measure applied with no tension by the research assistants. Two measurements were taken and the average was used to calculate the Body Mass Index and the Weight: Height ration. According to the exclusion criteria described above each participant was then either included or excluded in the study.

When in the testing area an explanation of the procedure was given and the participant was asked to expose the abdominal area. They adopted a crook lying position with their arms at their sides, ninety degrees knee flexion and no pillow under the head. Measurements were taken at rest and then with the muscle in an active state. Movements performed were the hollowing-in-manoevre (HI),

oblique crunch (OC) and chin-to-chest. The instructions given for the HI were to draw in the stomach and flatten the back on the bed. For the OC, to reach over with the right hand to touch the outside of the left knee and for the chin-to-chest, to lift the head off the bed and touch the chin onto the chest. The participants then had to demonstrate each movement.

Placement points for the transducer were measured and marked on the left side of the abdomen. Point A for imaging TrA, EO and IO, during the HI and the OC were measured on the mid axillary line, halfway between the anterior superior iliac spine and the inferior border of the last rib. Point B to measure RA during the chin-to-chest was three centimetres above the centre of the superior edge of the umbilicus. To capture the relaxed images of TrA, EO and IO, the transducer was placed horizontally with the midpoint over point A. Maintaining this point, the contracted image was captured. The participant then performed the HI and the OC. If TrA was not seen the transducer was moved laterally, in the same plane. To capture the relaxed and contracted images of RA the transducer was placed horizontally, with the edge furthest away from the investigator over point B. The transducer was shifted until the linea alba was off the screen and only the edge of the fascia and RA could be seen.

Each muscle was measured at the midpoint of the image, with the calliper cursor placed at the junction of the fascia and the muscle. If a muscle did not reach or tapered off at the midpoint, it was measured on the left side of the image. The length was automatically calculated by the machine.

Three members of the research team operated the US machine. One captured each participant's demographic information onto the US machine and froze and saved each image. The other two, "Investigator A" and "Investigator B" were separately involved in giving instructions of the movements to be performed, measuring and marking the points for the position of the transducer and capturing and measuring the images. Each participant was measured twice, once by each investigator. The order in which the investigators measured each participant was alternated to prevent any bias from occurring.

Statistical analysis

The Body Mass Index (BMI) was calculated using weight divided by height², and the waist-hip ratio (W:H) was calculated by measuring the circumference of the waist at its narrowest portion and the hips at the widest point by means of a tape measure. The Pearson's correlation co-efficient was used to determine inter-rater reliability. The dependent t-test was used to establish whether there was a significant difference between the two measurements. Descriptive statistics were used to determine investigator A and B's mean values of each muscle in a relaxed and contracted state. The averages of these means were calculated to create a set of 'normal' values for four different age groups. The independent t-test was used to determine whether there was a significant difference in muscle thickness between males and females, and in BMI and W:H comparing those with image clarity. In each of these, outliers were excluded by determining the standard deviation and multiplying it by 1.96.

It was decided *a priori* that a correlation in excess of $r=0.70$ and no significant difference between the scores of the raters would indicate reliability. This was to ensure agreement both in terms of the relative ranks of the scores as well as of the magnitude of the values.

Results

A total of 51 participants participated in the study of which 4 were excluded due to having caesarean sections. There were 23 females and 24 males aging from 30 to 69 years. The correlation between the investigators (Table 1) reached the criterion for reliability with the exception of IO OC ($r=0.58$, $p<0.01$) and TrA OC ($r=0.62$, $p<0.01$). The highest correlation co-efficient was for RA relaxed ($r=0.89$, $p<0.01$) (Figure 1).

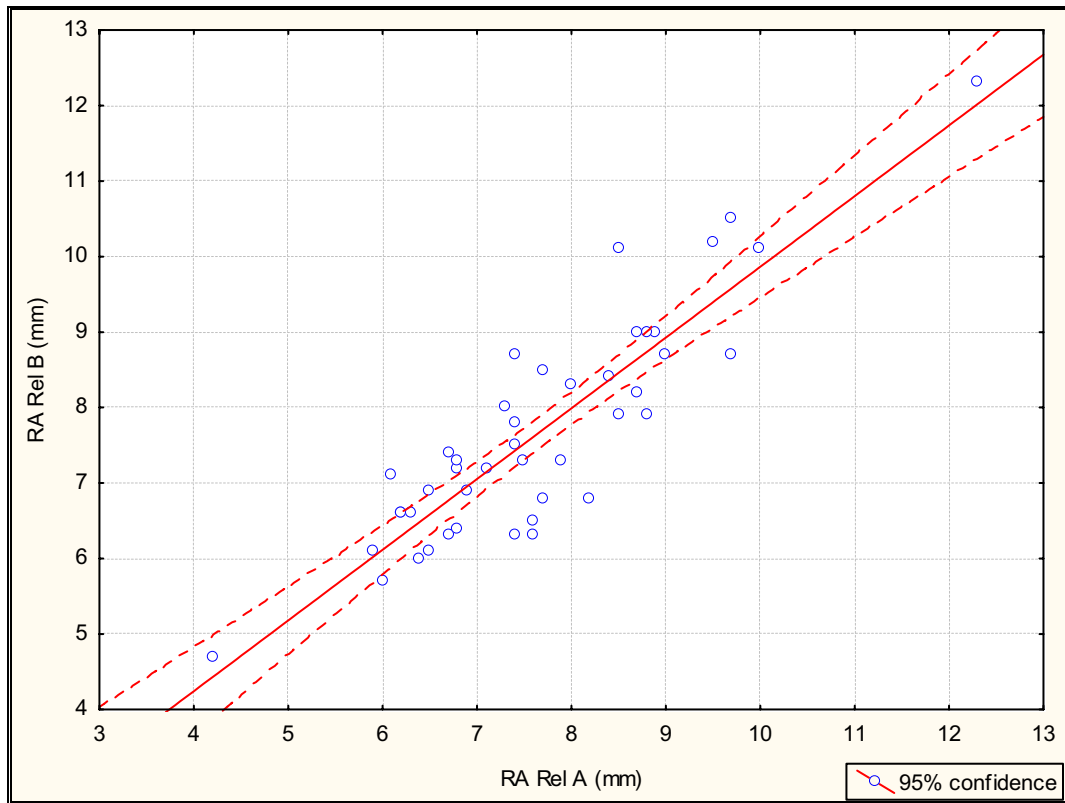


Figure 1: Scatter plot of scores from Rater A and Rater B of the relaxed Rectus Abdominus, the most correlated abdominal muscle measurement

Using the Dependent t-test it was found that EO HI ($p=0.02$), EO OC ($p<0.01$) and RA chin-to-chest ($p<0.01$) showed a significant difference between the investigator's muscle measurements (Table 1).

Table 1: Relationship between abdominal muscle measurements of Investigators 'A' and 'B'

Muscle (mm)	Muscle state	Mean 'A'	Std.Dv 'A'	Mean 'B'	Std.Dv. 'B'	N	r	p for correlation	t	p for difference
EO	Relaxed	4.91	1.46	4.67	1.25	45	0.76	<0.01	1.68	0.10
	<i>Hollowing in manoeuvre</i>	5.38	1.77	4.94	1.67	46	0.76	<0.01	2.52	0.02
	<i>Oblique crunch</i>	5.17	2.04	4.17	1.86	43	0.75	<0.01	4.69	<0.01
IO	Relaxed	8.29	2.28	8.11	2.39	47	0.87	<0.01	1.02	0.31
	Hollowing in manoeuvre	9.3	2.77	9.17	2.75	43	0.88	<0.01	0.64	0.53
	<i>Oblique crunch</i>	12.70	4.16	12.87	3.79	34	0.58	<0.01	-0.27	0.79
TrA	Relaxed	3.21	0.71	3.26	0.84	48	0.72	<0.01	-0.57	0.57
	Hollowing in manoeuvre	4.6	1.24	4.75	1.50	42	0.77	<0.01	-0.1	0.32
	<i>Oblique crunch</i>	4.44	1.15	4.78	1.37	28	0.62	<0.01	-1.65	0.11
RA	Relaxed	7.65	1.41	7.66	1.48	44	0.89	<0.01	-0.11	0.91
	Chin-to-chest/ head up	10.25	2.28	9.43	2.33	45	0.81	<0.01	3.86	<0.01

Table 2 shows the mean thickness of the abdominal muscles for all age groups included in the study. These means show that on contraction of the abdominal muscles the thickness of the muscle belly increases with the exception of EO. Across age groups it is evident that there is no common trend with muscle thickness.

Table 2: Mean muscle thickness of males and females for Investigator 'A'

Muscle (mm)	Muscle state	Mean	Std.Dev.	Mean	Std.Dev.	N	N	t-value	p
		Males	Males	Females	Females	Males	Females		
EO A	Relaxed	4.93	1.34	5.56	2.17	23	27	-1.2	0.24
EO B	Relaxed	4.63	1.33	4.56	1.35	24	26	0.18	0.86
EO A	Hollowing-in- manoeuvre	5.44	1.81	5.49	1.86	24	26	-0.11	0.92
EO B	Hollowing-in- manoeuvre	5.17	1.78	4.71	1.5	23	26	0.99	0.33
EO A	Oblique crunch	5.31	3.26	5.95	2.75	24	24	-0.73	0.47
EO B	Oblique crunch	4.27	2.24	4.48	2.19	22	24	-0.33	0.74
IO A	Relaxed	9.48	3.29	7.94	1.98	24	26	2.02	0.05
IO B	Relaxed	8.69	2.73	7.70	2.1	24	26	1.44	0.16
IO A	Hollowing-in- manoeuvre	11.22	3.60	8.60	2.29	23	26	3.07	<0.01
IO B	Hollowing-in- manoeuvre	11.0	3.35	8.07	2.17	24	26	3.71	<0.01
IO A	Oblique crunch	13.7	4.54	12.4	4.29	22	21	0.96	0.34
IO B	Oblique crunch	13.87	4.5	12.16	4.78	18	21	1.15	0.26
TrA A	Relaxed	3.40	0.8	3.11	0.65	24	25	1.43	0.16
TrA B	Relaxed	3.73	0.89	2.95	0.78	24	24	3.24	<0.01
TrA A	Hollowing-in- manoeuvre	5.23	1.65	4.42	1.35	22	25	1.85	0.07
TrA B	Hollowing-in- manoeuvre	5.17	1.61	4.44	1.35	22	24	1.68	0.1
TrA A	Oblique crunch	4.71	1.04	4.31	1.31	17	15	0.95	0.35
TrA B	Oblique crunch	5.87	1.67	4.5	1.56	18	20	2.62	0.01
RA A	Relaxed	7.96	1.51	7.41	1.26	24	27	1.42	0.16
RA B	Relaxed	8.03	1.65	7.41	1.34	24	25	1.45	0.15
RA A	Chin-to-chest	10.74	2.68	10.15	2.32	24	27	0.85	0.4
RA B	Chin-to-chest	10.08	2.6	8.97	1.99	23	25	1.68	0.1

* EO = External Obliquus, IO = Internal Obliquus, TrA = Transversus Abdominus,
RA = Rectus Abdominus, A = Investigator A, B = Investigator B

When comparing mean muscle thickness of males and females (Table 2) it was noted that males generally had a larger muscle thickness than females with the exception of EO. In particular IO HI had a significant difference with both investigator A's ($p < 0.01$) and investigator B's ($p < 0.01$) measurements. TrA relaxed for investigator B was also found to be significant ($p < 0.01$).

High BMI values were found to be associated with unclear images of the US machine ($p < 0.01$). (See Figures 2 and 3).

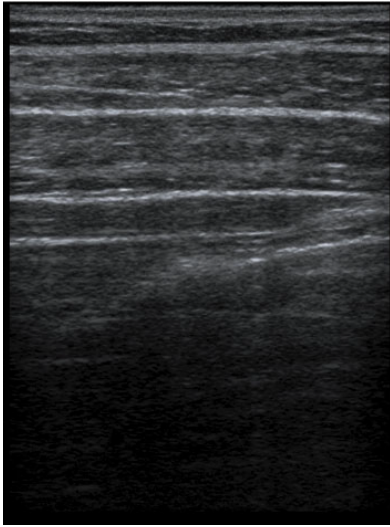


Figure 2: Good clarity ultrasound image of abdominal muscles: EO, IO & TrA

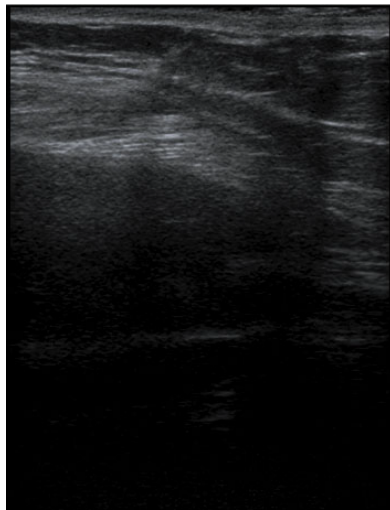


Figure 3: Good clarity ultrasound image of abdominal muscles: EO, IO & TrA

Table 3: Mean muscle thickness of males and females for Investigator 'A'

Muscle (mm)	Muscle state	Mean	Std.Dev.	Mean	Std.Dev.	N	N	t-value p	
		Males	Males	Females	Females	Males	Females		
EO A	Relaxed	4.93	1.34	5.56	2.17	23	27	-1.2	0.24
EO B	Relaxed	4.63	1.33	4.56	1.35	24	26	0.18	0.86
EO A	Hollowing-in- manoeuvre	5.44	1.81	5.49	1.86	24	26	-0.11	0.92
EO B	Hollowing-in- manoeuvre	5.17	1.78	4.71	1.5	23	26	0.99	0.33
EO A	Oblique crunch	5.31	3.26	5.95	2.75	24	24	-0.73	0.47
EO B	Oblique crunch	4.27	2.24	4.48	2.19	22	24	-0.33	0.74
IO A	Relaxed	9.48	3.29	7.94	1.98	24	26	2.02	0.05
IO B	Relaxed	8.69	2.73	7.70	2.1	24	26	1.44	0.16
IO A	Hollowing-in- manoeuvre	11.22	3.60	8.60	2.29	23	26	3.07	<0.01
IO B	Hollowing-in- manoeuvre	11.0	3.35	8.07	2.17	24	26	3.71	<0.01
IO A	Oblique crunch	13.7	4.54	12.4	4.29	22	21	0.96	0.34
IO B	Oblique crunch	13.87	4.5	12.16	4.78	18	21	1.15	0.26
TrA A	Relaxed	3.40	0.8	3.11	0.65	24	25	1.43	0.16
TrA B	Relaxed	3.73	0.89	2.95	0.78	24	24	3.24	<0.01
TrA A	Hollowing-in- manoeuvre	5.23	1.65	4.42	1.35	22	25	1.85	0.07
TrA B	Hollowing-in- manoeuvre	5.17	1.61	4.44	1.35	22	24	1.68	0.1
TrA A	Oblique crunch	4.71	1.04	4.31	1.31	17	15	0.95	0.35
TrA B	Oblique crunch	5.87	1.67	4.5	1.56	18	20	2.62	0.01
RA A	Relaxed	7.96	1.51	7.41	1.26	24	27	1.42	0.16
RA B	Relaxed	8.03	1.65	7.41	1.34	24	25	1.45	0.15
RA A	Chin-to-chest	10.74	2.68	10.15	2.32	24	27	0.85	0.4
RA B	Chin-to-chest	10.08	2.6	8.97	1.99	23	25	1.68	0.1

* EO = External Obliquus, IO = Internal Obliquus, TrA = Transversus Abdominus,
RA = Rectus Abdominus, A = Investigator A, B = Investigator B

The W:H was found to have no association with image clarity ($p=0.662$) (Table 3).

Table 4: Comparison between BMI and waist-hip ratio with image clarity

	Mean Good Image	Mean Poor Image	N Good Image	N Poor Image	Std. Dev Good image	Std. Dev Poor image	t	p
BMI	24.12	28.51	34	34	4.32	3.35	-3.67	<0.01
W:H	0.84	0.86	34	17	0.089	0.11	-0.44	0.662

Discussion

The results of this study show that the inter-rater use of the US imaging machine met the criteria for reliability in all muscles in the relaxed state. However, the stronger the contraction elicited (e.g. when doing head up for the RA or oblique crunch for the other muscles), the less reliable the measure. This could be as a result of poor reliability or, more likely, as resting measurements were reliable, variation in the patterns of muscle recruitment in the way in which the participants performed these movements from one contraction to the next.

The strongest relationships between investigators values were found when measuring RA, IO and EO. RA relaxed had the strongest correlation. This could be because RA is the most superficial muscle and according to Rankin et al. (2006) the thickest muscle at rest. This assumption is supported by Bemben (2002), who found that diagnostic US is reliable for muscles that are superficial and easily accessible.

The weakest relationship between investigators values was shown with TrA which could be due to it being the deepest muscle thus decreasing the clarity of the image. Upon contraction the thickness of the muscle belly increases, as shown in a study by Watanabe et al. (2004). As the thickness of the muscle belly increases, the depth at which the transducer must penetrate is increased, thereby further affecting image clarity. According to McMeeken et al. (2004), transducers with higher frequencies view superficial structures with great

precision and those with lower frequencies view deeper structures, but with poor precision. Adding to the above, the findings from the present study suggest that BMI plays an important part in clarity of the images and precision of the measurements obtained. It was found that participants with a BMI value higher than 28 provided images that were more unclear than those with a BMI lower than 24.

The OC showed the weakest correlation in EO, IO and TrA. This could be because the OC causes the muscle belly to move laterally on the screen making it difficult for the investigators to measure the muscle correctly as the head of the transducer needed to be moved to ensure that the muscle belly was measured.. Another possibility is that as the participants performed the movement the transducer head moved from its original position. The OC is a much larger movement compared to the HI and this may have affected certain participants breathing techniques and thus affected muscle thickness. This is shown in a study by Whittaker (2007) where it was found that during inspiration the abdominal muscles become longer and thinner, while the opposite occurs during expiration. Thus it may have been possible that some participants held their breaths while others didn't.

When comparing the mean muscle thickness between males and females it was found that, as expected, males have larger abdominals for most of the abdominal muscles in both a relaxed and contracted position. This is supported by a study carried out by Rankin et al. (2006) which obtained similar findings.

Limitations and recommendations

There are several limitations to this study that need to be addressed in further research. With regards to the movements performed, participant education and understanding as well as the investigators explanation and language used, could have influenced how the movements were performed. The movements used may not have been the most appropriate to obtain maximal contractions of the muscles; therefore it may be useful to further investigate more reliable movements, especially for EO and IO. It is recommended that static movements for obtaining muscle contraction e.g. resisted neck flexion are preferable to dynamic movements.

In the procedure it is important for the investigator to ensure that the transducer is kept in the same position and knows when and how to move it, should the muscle belly move laterally. Due to the effects of breathing on the abdominal muscles, freezing the image at the same point in the respiratory cycle may allow more accurate comparisons between participants. With reduced image clarity it is necessary to increase the depth of the transducer head so as to ensure viewing of the entire image.

Further study to investigate the stability of the measurement over time should also be undertaken.

Conclusion

This study looked at the inter-rater reliability of US imaging when measuring abdominal muscle thickness and it is concluded that it is a reliable measure of relaxed muscle activity. There is a need to standardise the stronger muscle contractions in terms of activity and strength to improve the reliability of the active measures.

US sound imaging can be used in older patients to reliably investigate the thickness of their muscles under resting and light activity. As it is non-invasive, takes little time to administer and provides reliable information regarding the state of contraction, it is recommended that it should be utilised both as a bio-feedback device and as an outcome measure to assess interventions aimed at recruiting abdominal muscles in an older adult population.

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THE EFFECTS OF A SHORT TERM PHYSICAL ACTIVITY INTERVENTION PROGRAMME ON BODY MASS INDEX, BLOOD PRESSURE, AND PERCENTAGE BODY FAT AMONG HIGH SCHOOL LEARNERS

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ABSTRACT

Introduction:

The increase in physical inactivity is thought to be one of the main risk factors for the development of diseases of lifestyle. This has highlighted the need for prevention and intervention programmes that are thought to assist in influencing the modifiable risk factors. Physical activity programmes have been proven to positively influence risk factors such as blood pressure and body mass index (BMI). Interventions by health professionals can assist in combating the problem. This study aimed to determine the effects of a short term physical activity programme on the BMI, body fat and blood pressure of high school learners in a local community in the Western Cape.

Methods:

The total number of learners who volunteered to participate in the study was 106. The study used a pre-test post-test design. The intervention programme was a 6 week programme run for 3 days per week for a period of 40 – 60 minutes per session. The intervention consisted of moderate to vigorous activities. Data was analysed by comparing learners who participated in the intervention and those who did not. Descriptive and inferential statistics were used in this study.

Results:

Prior to the intervention it was found that 18% were found to be obese and at least 10% were hypertensive. Following the intervention it was reported that blood pressure as well as BMI and percentage body fat was influenced in positive way.

Conclusion:

One can conclude that, a short term physical activity intervention programme conducted three times a week with moderate activities can affect the BMI and blood pressure levels of adolescents.

Key words:

Intervention, Learners, Schools, Physical Activity

Introduction

The increase in physical inactivity, over the last decades is thought to be one of the main risk factors for the development of diseases such as obesity, diabetes and cardiovascular disease

(Andersen, Crespo, Bartlett, Cheskin and Pratt, 1998; Kruger, Venter and Voster, 2003; Woolf et al 2008). Despite widespread attempts to increase physical activity in the general population, only a minority of adults and children in developed

countries engage in physical activity to a degree sufficient to maintain or increase health and physical well-being (Saris et al 2003). Risk factors which enhance sedentary behaviour among young people include large amounts of time spent watching television and/or playing computer games, the inability to play outside, inactive role models or parents who do not support children to be active, and the lack of sufficient physical education at school.

In South Africa, chronic diseases of lifestyle accounted for 28% of deaths of all adults between the ages of 35 and 64 years and 56% of South Africans between the ages of 15 and 64 years have at least one modifiable risk factor for chronic diseases of lifestyle (Steyn, Fourie, Bradshaw, 1992). A decade later in a study conducted by Frantz (2006) among high school learners, it was reported that 31% of the adolescents had more than one modifiable risk factor for chronic diseases of lifestyle one of which was physical inactivity. The latest burden of disease study in the Western Cape, South Africa highlighted that non-communicable diseases are among the leading causes of death and conditions such as diabetes had shifted from 8th place in 2001 to 5th place in 2004 (Department of Health, 2007). Promotion of health enhancing activities is considered a key functioning role of health professionals such as physiotherapists to minimise these modifiable risk factors.

The one area where lifestyle modifications can be effected is among school children as part of their physical education programme. Various countries have attempted to implement physical activity programmes within schools. South Africa also attempted this with minimal success (Burnett, 2000). The co-ordination of physical activity initiatives for health promotion in South Africa has been fragmented. There is lack of basic infrastructure and facilities in many communities. In addition, physical education within the public school system is under threat and it is therefore imperative to look at the alternative methods to combat the increasing epidemic of physical inactivity that South Africa faces.

Institutions of higher learning train students who need to practise the implementation of health education or health promoting programmes into the

communities where they work. The health professional students can be utilized, as part of their training, to contribute to the education of communities in order to improve health. Thus this study aimed to determine the effects of a short term physical activity programme run by physiotherapy students on the anthropometric and physiological measurements of high school learners in a local community in the Western Cape. If the programme is found to be successful, continuity in this school would be viable with the assistance of tertiary institutions.

Methods

The study was conducted at a high school in a community in the Western Cape. The school was considered for the study for various reasons which included it being a school located in a community which is demographically representative of the Western Cape. All the learners at the school come from the community. In addition, this public school also had no active physical education programmes in place as it had been replaced by additional academic subjects.

A pretest-posttest design was used for this study. The study used a conveniently selected sample of 106 Grade 8 to Grade 11 learners who volunteered to participate in the study and were all assessed for the baseline measurements which included demographic data and anthropometric measurements of weight, height, BMI, skinfolds and physiological measurements of pulse rate and blood pressure. This data was captured following a presentation on the importance of physical activity to the learners and interested learners were invited to collect an information sheet explaining the aim of the research and consent forms were given to them to be signed by the parents and the interested learners. All relevant information was captured on a data capture sheet which was completed by the researcher and measurements were taken by trained biokinetics students.

Learners were then invited to participate in a physical activity intervention programme which lasted for 6 weeks and was run 3 times a week for 40 – 60 minutes. 53 learners voluntarily agreed to participate in the intervention programme and the 53 learners for the non-intervention group were randomly selected from the class list and matched

for gender to the intervention group. The programme was run at the end of the school day i.e. 14h30-15h30 by physiotherapy students. Ethical clearance to conduct the study was obtained from the University of the Western Cape and Department of Education. Learners were included if they had parental consent, had passed the Physical Activity Readiness Questionnaire and had given written consent. The intervention programme was discussed with the learners and included activities that interested the learners such as dancing for aerobic exercise, ball exercises, strength and flexibility exercises. Thus the intervention consisted of moderate to vigorous activities for at least 40 minutes of the time. This was based on the United States Centre for Disease Control and Prevention (1996) guide for moderate-vigorous physical activity. Pre and post intervention measurements were taken in a central venue at the school of those who participated in the programme and an equivalent group of learners who had previously been measured but had not participated in the intervention programme were then also evaluated.

Intra-rater reliability for skin fold measurements and blood pressure measurements were tested and the results using the intraclass correlation co-efficient shows a Chronbach's alpha of 0.836, 0.786 and 0.991 for systolic blood pressure, diastolic blood pressure and skinfold measurements respectively. Data was analysed using SPSS and descriptive and inferential statistics was used to report the data.

Descriptive statistics using frequencies expressed as percentages were used to obtain information on the categories of BMI, Blood pressure and % body fat. The formula for body fat percentage was determined according to the American College of Sports Medicine (2000) where the skinfold area for men are chest, abdomen and thigh and for women are triceps, suprailiac and thigh. Percentage body fat of the participants as well as blood pressure measurements for hypertension was classified according to percentiles (ACSM, 2000). According to Himes and Dietz (1994), it is recommended to classify BMI for age at or above the 95th percentile as overweight and between the 85th and 95th percentile as at risk of being overweight. Inferential statistical analysis was used to determine the associations between demographic information and

BMI, blood pressure and % body fat. This was done in the form of cross-tabulations. Results were significant at $P < 0.05$ level.

Results

The mean age of the convenient sample of 106 learners was 14.9 years (SD=1.42 years) and a range of 14 years to 18 years. Both the intervention and non-intervention group consisted of 21 male learners and 32 female learners. Among the 106 participants, 76% had a normal BMI, with 5% classified as underweight (BMI < 5th percentile) and 19% were at risk of obesity (BMI > 85th percentile = $>30\text{kg/m}^2$). The association between the BMI and gender was found to be statistically significant ($p=0.00$) with females being more at risk for obesity. According to the blood pressure readings, 10.6% were at risk of hypertension based on the systolic blood pressure and 6.2% were at risk based on the diastolic blood pressure. The association between the systolic blood pressure and age and gender was found to be statistically significant with $p=0.03$ and $p=0.00$ respectively.

Comparison between the intervention and non-intervention group showed that there did not appear to be much difference between the groups prior to the intervention (Table 1). The mean age for the intervention group was 14.6 years (SD=1.3) and for the non-intervention group was 13.9 years (SD=1.3). However, more detailed analysis within groups indicated that prior to the intervention 18% of the intervention group was classified as overweight (BMI $>25\text{kg/m}^2$) and 22% of the non intervention group was classified as overweight according to their BMI. Within the intervention group 8.4% were classified as being hypertensive and 10.8% in the non intervention group. Based on the percentage body fat and BMI, 24% were classified as being overweight in the intervention group and 26% of the non-intervention group.

Following an intervention of 6 weeks the following was reported. Table 2 highlights the difference in the groups post intervention.

The learners classified as overweight in the intervention group dropped from 18% to 13.2%. In addition, 9% decreased their overall BMI and 4% increased their BMI. In the non-intervention group

Table 1: Mean baseline anthropometric and physiological measurements of learners in the intervention and non intervention group prior to intervention

Variable	Intervention Group (N=53)		Non-intervention Group (N=53)	
	Mean	SD	Mean	SD
Weight (kg)	55.0	14.2	53.3	12.2
Height (m)	1.6	0.1	1.6	0.1
BMI (kg/m ²)	21.1	4.5	21.0	4.2
% body fat(%)	24.9	12.7	26.2	13.3
SBP (mmHg)	111.5	14.4	111.1	12.1
DBP (mmHg)	70.0	7.9	72.7	10.5
Pulse rate(bpm)	79.7	13.4	83.4	16.0

BMI = Body Mass Index

SBP = Systolic Blood Pressure

DBP = Diastolic Blood Pressure

22% were initially classified as overweight and post intervention this number had increased to 32%. In this group 13% decreased their BMI however, 30% increased their BMI. Fig 1 shows the effect of the physical activity programme on BMI among learners.

The effect of the intervention on percentage body fat indicated that 32% were classified as overweight in the intervention group and 36% were classified as overweight in the non-intervention group.

Analysis of the blood pressure post intervention

indicated that in the intervention group, 23% of the group normalized their blood pressure and 9% moved to having a higher blood pressure. Within the non-intervention group, 30% normalized their blood pressure but 64% moved towards having a higher blood pressure. Using the paired sample t-test within the intervention group it was found that both systolic blood pressure and diastolic blood pressure were statistically significantly influenced by the intervention programme, $p=0.03$ and $p=0.01$ respectively. Within the non-intervention group, the paired sample t-test showed a statistically

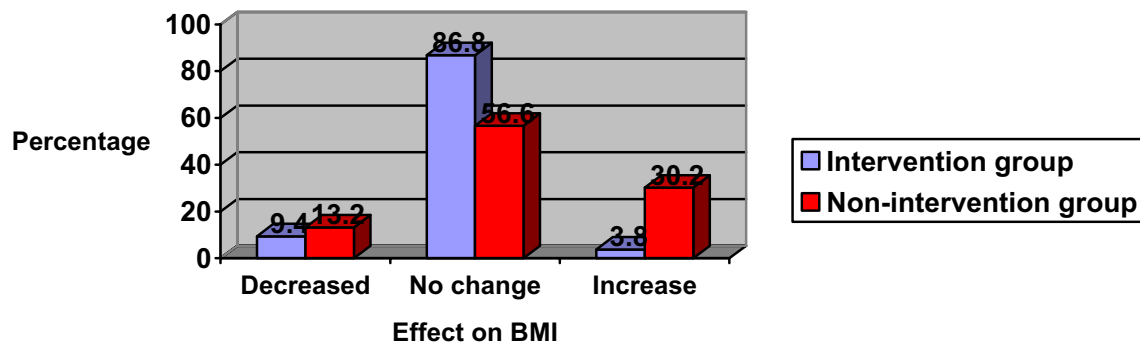
Table 2: Mean baseline anthropometric and physiological measurements of learners in the intervention and non intervention group post intervention

Variable	Intervention Group (N=53)		Non-intervention Group (N=53)	
	Mean	SD	Mean	SD
Weight (kg)	55.6	15.3	55.7	12.6
Height (m)	1.6	0.1	1.6	0.1
BMI (kg/m ²)	21.1	4.5	21.3	4.2
% body fat(%)	22.0	12.7	27.2	13.3
SBP (mmHg)	110.2	14.4	114.5	12.1
DBP (mmHg)	71.0	7.9	75.1	10.5
Pulse rate(bpm)	79.7	13.4	83.4	16.0

BMI = Body Mass Index

SBP = Systolic Blood Pressure

DBP = Diastolic Blood Pressure

Fig 1: Effects of intervention on BMI

significant change with regard to weight and BMI ($p=0.00$).

At the end of the intervention, the learners who participated in the intervention programme highlighted the need for continuity and the need for support from outside stakeholders as teachers did not have the time.

Discussion

This study focused on a short term physical activity intervention programme and the results of the study concur with previous studies that indicate that physical activity can influence BMI and hypertension (Pate et al, 1995). In the current study, the presence of emerging risk factors for chronic diseases of lifestyle was evident in the form of learners being at risk for obesity and hypertension. Lauer and Clarke (1989) emphasized that children identified as having high blood pressure are at great risk of becoming hypertensive adults. Although the effects of this programme may be minimal, it highlights the importance of encouraging physical activity among young people. The results provide evidence that a 6 week intervention programme can influence certain risk factors such as obesity and hypertension. The results are also supported by other studies (Nielsen and Andersen, 2003).

School based interventions can assist learners in becoming more active by providing support for active lifestyles. Even though the outcomes of intervention programmes may differ, the impact on health can influence the public health concern of the increasing physical inactivity among young

people. Questions raised from the study included: If these learners continued with the programme, would they have seen more substantial changes? Would these learners continue with the programme outside of the controlled environment of the study and influence others? Perhaps most importantly, does a short-term intensive intervention such as this have an impact on overall mortality?

In addition, though schools may be finding it difficult to incorporate physical activity interventions into their school programme, schools can be assisted by students from tertiary institutions who are training health professionals. A limitation of the study was the small sample size and the need to monitor the effects of the programme over a longer period of time.

Conclusion

One can conclude that, a short term physical activity intervention programme conducted three times a week with moderate activities can affect the BMI and blood pressure levels of adolescents positively. Such interventions should thus be encouraged on a regular basis in schools.

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EXPLORING AND CURBING THE EFFECTS OF HIV/AIDS ON ELDERLY PEOPLE IN UGANDA

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Abstract

Introduction:

This paper presents HIV/AIDS experiences of elderly persons in Uganda as revealed by an ongoing descriptive cross-sectional study covering eight districts, namely: Pallisa, Kampala, Jinja, Lira, Nebbi, Ntungamo, Luwero and Mbarara. These districts represent both the rural and urban areas of the four regions of Uganda, including: Western, Northern, Eastern and Central region.

Methods:

The study employed a mixed method approach using a sequential exploratory strategy. Data was collected using not only focus group discussions and in-depth interviews held with 165 elderly persons but also a validated interview schedule administered to 50 key informants. Elderly persons participated in the study by providing data on their HIV/AIDS-related experiences. Key respondents were selected to provide data on strategies that could be adopted to curb the effects of the epidemic. This paper is based on one of the study's objectives, which focused on exploring the effects of HIV/AIDS on Uganda's elderly people; coping mechanisms used to deal with HIV/AIDS; and strategies for curbing its effects. Data was analysed using content analysis and the descriptive method of SPSS.

Results:

Results show that HIV/AIDS affected most of the elderly people in Uganda by killing their children and spouses, and leaving them with a big burden of taking care of AIDS orphans; yet majority of these people were financially too incapacitated to shoulder it amply. HIV/AIDS also infected the elderly people. The epidemic introduced the need for ARVs and other health services that elderly people found too difficult to access due to poor health service delivery systems in Uganda. Most elderly people used food cultivation as a mechanism for coping with the burden of orphans. These results lead to recommending that government should economically empower elderly people through formulation and effective implementation of welfare policies regarding pension and special fund for these people.

Conclusion:

There is a need for the government to provide adequate and free HIV/AIDS-related health services and also increase educational support for HIV/AIDS orphans.

Key Words: Elderly, HIV/AIDS, Uganda

Introduction

HIV/AIDS is one of the major challenges of the 21st century. It is still a critical problem facing many

countries the world over. According to HelpAge (2005), more than 39 million adults and children are living with the disease worldwide and of these 22

million are living in Sub-Saharan Africa. The same source indicates that the number of children orphaned by AIDS alone increased from 11.5 million in 2001 to 15 million in 2003; and that it is estimated to increase to 24 million by 2010. HIV/AIDS has not spared elderly people (Best, 2002). They, too, have been infected and affected (Abrahams & Pia, 2002).

However, despite the existence of a lot of scholarly work on HIV/AIDS, not much is covered about how the epidemic has affected elderly people in Uganda; let alone how the effects can be curbed. This has been caused by the fact that most of the HIV/AIDS statistics are confined to the age of 49 years (Kiiza-Wamala, 2008) and thus exclude elderly people as a result of the assumption that HIV/AIDS is a young people's disease. This assumption is however, illusory since there is evidence that the epidemic has infected and affected every member of society, including elderly people. Studies on the impact of HIV/AIDS indicate that through self-assessments, elderly people have singled out this epidemic as one of the illnesses that have affected their health and brought them both social and economic costs (Baden & Wach, 1998; Barnett & Whiteside, 2002; Loewenson, 2004; Mall, 2005). Elderly people have fallen victim to the disease (Best, 2002; Fouad, undated). Many of them have lost economic hope as a result of losing their adult children to HIV/AIDS.

The epidemic has killed the middle-aged adults and shifted the burden of child caretaking onto the elderly people; and the burden is burgeoning as the number of children orphaned by the epidemic continues to increase (Ainsworth and Dayton, 2000; Kakooza, 2004; Rugalema, 1999). Elderly people thus are now playing a key though arduous role of bringing up children, the world's future capital. Elderly people also find themselves providing physical, economic, and social support to their HIV/AIDS sick children; hence having less time to engage in income generating opportunities so as to sustain their livelihoods (Tavengwa-Nhongo, 2004). HIV/AIDS has indirectly changed the role of elderly people from one of being provided for to one of being providers (Kakooza, 2004). This has particularly been cited among elderly women who in Africa are, moreover, less likely to have regular income. Indeed, HelpAge International (2008a,

2008b) highlighted a gender division in which 80 percent are elderly women caregivers and only 20 percent are elderly men caregivers.

The HIV/AIDS-related Human Rights include the right to freely receive information, social security and welfare assistance but elderly people are unable to realize these rights because they have been excluded from most of the HIV/AIDS programmes (Kyomuhendo, 2003). While promotion and protection of such human rights would have reduced elderly people's vulnerability to HIV infection, trifling efforts have been spent on ensuring that this happens. Consequently, older people have remained trivially empowered to respond to the epidemic (Kyomuhendo, 2003). Most of the ongoing HIV/AIDS awareness campaigns, treatment programmes and researches in the world do not target elderly people. Consequently, they end up catching the disease out of ignorance (Mugenyi & Kanyamurwa, 2004). They also take long to know that they are really suffering from the epidemic because of their tendency to largely believe in and use traditional healing (Mukasa-Monico, Otolok-Tanga, Nuwaga, Aggleton & Tyrer, 2001).

In 2001, the United Nations Declaration on HIV/AIDS recognised the role played by elderly people and committed itself to adjusting and adopting economic and social development policies that address the special needs of these people (United Nations, 2001). Unfortunately, very few and moreover ineffective national policies have been put in place (HelpAge, 2005). In Uganda, despite considering HIV/AIDS as a developmental issue in the country's 2025 Vision and Poverty Eradication Action Plan (PEAP) (Asingwire & Kyomuhendo, 2003), elderly people infected and affected by the epidemic have not been included in most of the development programmes. There are no welfare programmes targeting these people; and no special healthcare programmes for them as there are for children and maternal health (Alun (2003).

Elderly people are highlighted in Uganda's National HIV/AIDS Policy as one of the groups that should be provided with HIV/AIDS Voluntary Counselling and Testing (VCT) services. However, this policy addresses elderly people on paper because there is nothing much to show on ground (HelpAge

International, 2006). Most of the VCT services target youths and adults. There are almost no elderly-people-friendly VCT services provided in the country. Uganda's Policy on Antiretroviral Therapy and National Health Policy have not helped matters either. A review of these policies reveals that none of them gives elderly people living with HIV/AIDS the attention they deserve. While the policy on antiretroviral therapy gives guidelines to the administration of this therapy and while it seeks to promote the provision of information regarding ARVs at community and facility levels, it is silent on elderly people. Similarly, the various health services highlighted by the National Health Policy, including immunization, vaccination, medical treatment, antenatal services, and adolescence services, are largely not for elderly people (Ministry of Health, 2005/06). This scenario is dangerous to these people. It was cited as one of the major causes of HIV/AIDS deaths among elderly females in Zimbabwe (Mutangadura, 2001).

It has also been noted that less priority is given to elderly people affected and infected by HIV/AIDS in terms of budget allocations both at national and district levels (Kawogo, 2008). They are the ones disadvantaged when it comes to national budgetary priorities. The exclusion of HIV/AIDS infected or affected elderly people from many of HIV/AIDS welfare programmes not only renders these people more vulnerable to the epidemic. It also casts doubt as to whether the programmes have effectively achieved their purposes in the context of the Millennium Development Goal of eradicating HIV. In fact, studies on the impact of HIV/AIDS indicate that nothing much has been done to include elderly people in HIV prevention and treatment programmes (Alun, 2003; Alun & Tumwekwase, 2001; Hardon 2005, Bekunda, Kibaalya, Rwibasira, Asaba, Haag, Camilo, & Foex, 2004).

The foregoing observations suggest that little is known about the plight of Uganda's elderly people infected or affected by HIV/AIDS. It is not clear how the disease has affected these people; how they cope with it and what needs to be done in order to curb the effects. It is in the light of this situation that a study was instituted to explore the effects of HIV/AIDS on elderly people in Uganda; the mechanisms used by these people to cope with the disease; and how the effects can be curbed. The

findings are presented later in this paper after the discussion of the methodology used to collect and analyze them.

Methodology

The study, a part of which makes up this paper, was designed as a descriptive cross-sectional survey: For it was intended to collect first hand and in-depth data about the HIV/AIDS experiences from different categories of relatively many respondents, who included 165 rural and urban-based elderly people as well as 50 key informants. Thus 215 respondents took part in the study. The study focused specifically on elderly people because their plight had largely been neglected, especially in respect of addressing their HIV/AIDS-related experiences. The study adopted Creswell (2003) mixed method approach based on a sequential exploratory strategy. The strategy was used to explore the living experiences of elderly people in Uganda. It thus helped to collect and analyze both qualitative and quantitative data. Indeed, this strategy focuses on expanding the understanding of qualitative data by complimenting it with quantitative data (Phillips, 2005). Data was collected in two phases.

The first phase involved collecting qualitative data from elderly respondents. These respondents were accessed using permission granted by the University of Western Cape, South Africa and Uganda National Council of Science and Technology. They were selected from eight districts of Uganda using stratified and purposive sampling. The districts were themselves selected using stratified and simple random sampling. Stratified sampling was used to categorise the districts according to the four regions of Uganda, namely: Central, Northern, Eastern, and western region. This implies that four lists were formulated to act as sampling frames. From each list, two districts were selected using simple random sampling. This was intended to give each district an equal chance of being selected to participate in the study. The selected districts included: Pallisa, Jinja, Mbarara, Ntungamo, Luwero, Kampala, Lira and Nebbi.

Stratified sampling was used to divide each selected district into a rural and an urban setting. While the urban setting was considered as the area

within a radius of 2 kilometres from any town in any of the selected district, the rural setting was considered as any other area lying beyond the 2-kilometre radius. Elderly respondents were then selected from each setting purposively. Purposive sampling was used to ensure that only elderly people infected or affected by HIV/AIDS were selected. Data was collected from elderly people using in-depth interviews and focus group discussions aided by an interview guide whose content validity index was 0.878, implying that its items were largely able to help collect the required data. Data was collected this way so as to facilitate verbal communication and probing both of which enhanced collection of complete answers by allowing respondents to express their views unlimitedly and in their own languages.

Regarding in-depth interviews, each session was conducted in a highly informal, conversational and face-to-face style that lasted for one hour. The interviews and discussions began by asking about the age of a respondent and proceeded to the HIV/AIDS-related themes. Responses from the elderly were tape recorded. Regarding focus group discussions, one session was conducted in each region of Uganda, implying that four discussions were held. The purpose was to get a general in-depth understanding of the effects of HIV/AIDS and coping mechanisms. The discussions were carried out with the aid of an interview guide.

The collected data was analysed using the qualitative technique of content analysis. This involved listening to the recorded responses, transcribing, editing, and describing them carefully and systematically according to the context of the study. Where necessary, the responses were summarised using the thematic approach aided by the interpretative technique. The developed themes were appropriately coded and entered into the SPSS which transformed them into frequency distributions. This was carried to reflect the quantitative picture of the responses from which they were developed.

The second phase focused on collection of quantitative data based on the insight attained from the collected qualitative data. Based on Borkan's (2004) typology, the phase involved designing an interview schedule, pre-testing it to ensure that its

items were valid and reliable, and administering it to 50 key informants. Pre-testing revealed a content validity index of 0.868 and an Alpha coefficient of 0.875, which indicated that items in the interview schedule were highly valid and dependable.

The key informants to whom the interview schedule was administered were selected purposively from Uganda's organizations dealing with elderly people. These included: the Department of Elderly People in the Ministry of Gender and Labour; and Ministries of Health, Local Government, Agriculture, Education and TASO (The AIDS Support Organisation). Others key informants were selected from the Parliament of Uganda. Others included officials and social workers selected from non-government and religious organisations. These respondents were selected purposively so as to get only those knowledgeable about elderly people's HIV/AIDS experiences.

Interview schedules were administered to key informants after fixing appointments with them. Some key informants asked for time to be able to answer adequately. This was allowed but on request that they spend at most two days. The collected data was analyzed using the thematic approach aided by the interpretative technique. The developed themes were appropriately coded and entered into the SPSS where they were transformed into frequency distributions.

To note is that the actual sample size of 215 fell short of the expected size, which, according to Krejcie & Morgan (1970) cited in Amin (2005: 454), should have been 384, given that elderly people in Uganda exceed 100,000. They constitute 6.1% of Uganda's 30 million people, implying that their total is 1,830,000 (Uganda Bureau of Statistics, 2002). The shortfall is attributed to the following problems encountered during data collection:

- Elderly people were difficult to identify because of their small proportion in Uganda but also because many of those who looked elderly divulged ages that were much below 60 years, the minimum age considered to be selected to participate in the study. The situation was eased when the minimum age was lowered to 50 years but still the targeted number was not realized.

- Elderly people in rural areas were living very remotely from each other. Accessing them involved moving long distances. In some cases, this implied traversing the whole district, which was very costly.
- Some research assistants did not reach out to all the places where elderly people were living. Getting some of the research assistants to collect data from the elderly necessitated constant telephone reminders and pleas.
- Getting information to do with a person's HIV/AIDS status is regarded as very sensitive and secretive, especially among the victims who are not living positively. This was the case with some of the selected elderly respondents. They were too uneasy and sceptical to divulge some of the vital data on their HIV/AIDS experiences. Some of the would-be resourceful elderly respondents feared to participate in the study arguing they would be exposed. Attempts were made to convince them that ethics would be observed by not divulging their names and specific locations but this did not change some of them. This limitation was minimised by eliminating those who preferred to keep their HIV/AIDS experiences confidential.

It should be noted however, that despite failing to get a statistically representative sample size, the results can be generalized to all Uganda's elderly people affected and infected with HIV/AIDS since respondents were selected from representative regions and districts of the country.

Results

Findings in this section are presented in three subheadings. These are: effects of HIV/AIDS on the elderly, coping mechanisms, and the strategies to improve on their livelihood.

a) Effects of HIV/AIDS on Elderly People IN Uganda

The effects of HIV/AIDS on elderly people in Uganda were established by asking them to describe how the epidemic had affected them and their families. Results from the thematic analysis of their responses are presented in Table 1.

A quick glance at the results in Table 1 suggests that HIV/AIDS affected the largest proportion (27.9%) of elderly people in Uganda by leaving them with a burden of orphans. A critical analysis reveals that the combination of those who lost all or some of their children, spouses, and grandchildren to the epidemic constituted the majority (58.1%). This indicates that the most horrendous effect of the epidemic constituted death of close kin, especially children and spouses. Table 1 indicates further while the death of children was more felt by urban-based elderly people (60.6%), the burden of children orphaned by the disease was felt more by the rural-based elderly people (38.6%). This indicates that the effect of the disease varied across settings. Other effects of the disease are shown in the table. The fact that HIV/AIDS caused enormous effects on Uganda's elderly people in terms of killing their children and spouses as well as leaving

Table 1: Impact of HIV/AIDS on the older persons in Uganda

Effects	Responses of Elderly Respondents by Settings					
	Urban		Rural		Total	
	Count	%	Count	%	Count	%
Led to death of all my children	9	14.1	4	4.0	13	7.9
Has killed some of my children	15	23.4	5	5.0	20	12.1
Has left me with a burden of orphans	7	10.9	39	38.6	46	27.9
Claimed the life of spouse	6	9.4	17	16.8	23	13.9
Killed my children and is now killing grandchildren	24	37.5	16	15.8	40	24.2
I am infected with it	2	3.1	11	10.9	13	7.9
Has brought me many sicknesses and weakened me	1	1.6	6	5.9	7	4.2
Has humbled me and increased my faith in God	.00	.00	3	3.0	3	1.8
Total	64	100.0	101	100.0	165	100.0

Box 1: Verbatim Responses of elderly people on the Impact of HIV/AIDS

My children have died from AIDS and I have been left helpless but with orphans who need school requirements. One of the orphans is affected with the disease (Female respondent, 60 years, Lira, Northern region)

AIDS has greatly affected my family; my four children were laid to rest in the banana plantation over there. They were all boys (Female respondent, 70 years, Mbarara, Western region)

I have orphaned grandchildren whose parents died from AIDS. One was taken away and I have remained with one who now has dropped out of school in senior four due to lack of money to support her (Female respondent, 60 years, Nakawa, Kampala, Central region).

AIDS has greatly affected my home because the father of my children, plus some children died. I am also infected and I am on ARVs. I still have to work for my children, educate and feed them alone. All my family members rejected me because they said that I am the one who killed their son with the disease, so I am struggling to bring up my children alone. I cannot even manage to get drugs to treat myself because the money I get is very little to cater for all our needs (Female respondent, 61 years, Palisa, Eastern region).

AIDS has affected my family because I lost one child and I have orphans. Because of AIDS, my grandchildren and I are suffering. I cannot provide support. I used to stay with them but when I could not manage to provide food, relatives from their father's family took them away (Female respondent, 60 years, Luwero, Central region).

AIDS has affected me because it killed most of my brothers and sisters. These left a number of orphans that I have the responsibility to look after. Now even some of my own children are also infected although they haven't died (Male respondent, 60 years, Jinja Eastern region)

them with the burden of orphans was more concisely expressed by some of the elderly respondents as summarised in Box 1.

Generally, results indicate that HIV/AIDS caused most elderly people in Uganda to lose their children and to shoulder the burden of looking after orphans. Some elderly people had to face discrimination and stigmatization as a result of suffering from the disease.

b) Coping Mechanisms Uganda's Elderly People use to Deal with the Effects of HIV/AIDS

Elderly respondents were asked about how they coped with the effects of HIV/AIDS. The thematic analysis of their responses led to results summarised in Table 2.

From Table 2, the mechanisms used by Uganda's elderly people to cope with the effects of HIV/AIDS were: growing as much food as they could to feed

the orphans, taking ARVs, giving their lives to Jesus, appealing to good Samaritans for help, telling surviving children to send them assistance, and going for counselling to avert the trauma. Table 2 shows that the coping mechanism that most elderly people (55.2%), including 54.7% in urban and 55.4% in rural areas used was to grow as much food as they could so as to feed children orphaned by HIV/AIDS. Elderly people who coped with the effects of the disease with the help of good Samaritans specified some of these Samaritans. Even those that coped with the effects by giving their children and grandchildren advice articulated the advice that they gave.

The details are summarised in Box 2.

Box 2 indicates that some elderly people coped with the impacts of HIV/AIDS when PLAN International helped to educate the orphans under their care. Other coped by advising their children and grandchildren to be extra careful when

Table 2: Mechanisms Used by Elderly People in Uganda to Cope with HIV/AIDS

Coping Mechanism	Responses of Elderly Respondents by Settings					
	Urban		Rural		Total	
	Count	%	Count	%	Count	%
I grow as much food as I can to feed the orphans	35	54.7	56	55.4	91	55.2
I am on ARVs	2	3.1	10	9.9	12	7.3
I joined HIV/AIDS association/group	8	12.5	7	6.9	15	9.1
Gave my life to Jesus	4	6.3	3	3.0	7	4.2
Appeal to good Samaritans to help	4	6.3	3	3.0	7	4.2
Tell my children to send me assistance	4	6.3	10	9.9	14	8.5
Went for counselling to avert the trauma	.00	.00	3	3.0	3	1.8
Advise grandchildren to be careful about HIV	7	10.9	9	8.9	16	9.7
Total	64	100	101	100	165	100

Box 2: Verbatim Responses of Elderly Respondents on Mechanisms used to cope with HIV/AIDS

PLAN International helped us to educate our orphans up to senior four but they stopped and now these children dropped out. (Female respondent, 60 years, Kawempe, Kampala, central region)

Ever since I heard of and experienced the wrath of HIV/AIDS, I started emphasizing to my children and grandchildren to be extra careful. I take the time and talk to my remaining children about AIDS. I advise the grandchildren to be careful when choosing partners and not to play around with girls or boys, or to use condoms just in case... Although I get little money through selling food, I ensure that I provide for them educationally for their future self-sustenance while am still with them (Female respondent, 60 years, Kawempe, Kampala, central region)

I always tell my grandchildren to use condoms when they find themselves in the situation that can lead to getting infected by the HIV/AIDS (Male respondent, 72 years, Nakaseke, Luwero, central region).

choosing partners, not to carelessly play around with girls or boys, or to use condoms in order to be safe.

c) Strategies for dealing with effects of HIV/AIDS on the elderly people in Uganda

These strategies were established when the elderly respondents were asked how they wanted government to help address the impacts of this epidemic. Content analysis of their responses led to results shown in Table 3.

From Table 3, the strategies to help address the effects of HIV/AIDS on elderly people in Uganda

focused on government: initiating a special fund for HIV/AIDS orphans; funding or soliciting donor funding of HIV/AIDS orphanages; educating HIV/AIDS orphans free of charge; distributing free condoms to the grandchildren; providing free VCT services, free ARVs, and food to HIV positive older persons; and sensitizing grandchildren about HIV/AIDS. Table 3 indicates while the largest proportion of elderly people (17.2%) recommended that government should initiate a special fund for HIV/AIDS orphans and provide free ARVs to HIV positive elderly people (17.2%), the largest proportions the rural elderly people recommended provision of food (17.9%) and sensitization of

Table 3 Strategies suggested by elderly Respondents for addressing the effects of HIV/AIDS on them

Strategies	Responses of Elderly Respondents by Settings					
	Urban		Rural		Total	
	Count	%	Count	%	Count	%
Initiate a special fund for HIV/AIDS orphans	15	17.2	10	12.8	25	15.2
Fund or solicit donor funding for HIV/AIDS orphanages	14	16.1	5	6.4	19	11.5
Educate HIV/AIDS orphans free of charge	9	10.3	12	15.4	21	12.7
Distribute free condoms to the grandchildren	6	6.9	13	16.7	19	11.5
Provide free VCT services to HIV positive elderly	13	14.9	6	7.7	19	11.5
Provide free ARVs to HIV positive elderly	15	17.2	5	6.4	20	12.1
Sensitize grandchildren about HIV/AIDS	7	8.0	13	16.7	20	12.1
Provide food to HIV/AIDS elderly victims	8	9.2	14	17.9	22	13.3
Total	87	100	78	100	165	100

grandchildren about HIV/AIDS and providing them with free condoms (16.7%). Some of the elderly people were so articulate that it was felt worthy to note their suggestions as summarised in Box 3.

Box 3 shows that elderly respondents wanted government to provide HIV positive elderly people with free ARVs and Voluntary Counselling and

Testing (VCT) and also their grandchildren, particularly orphans, with free education, sensitization about HIV/AIDS, and free condoms. In addition, key informants were asked to divulge plans that could help solve the problems of HIV/AIDS facing elderly people in Uganda. The thematic analysis of their responses led to results presented in Table 4.

Box 3: Verbatim Suggestions on Strategies for Addressing the Effects of HIV/AIDS on Elderly People in Uganda

What has increased the prevalence of HIV/AIDS this far is that people are not educated about it. They don't take caution of who they go out with. Long ago people used to investigate about the background of the person before getting involved with them. But now parents and the government have left their roles of keeping the morals, giving children the freedom of making their own choices and decisions while still in the schools. Most of the children are taken unaware because they don't know what to do when their sexual desires are high. They behave wildly. Government should sensitize the youth about the dangers of contracting HIV/AIDS. It should provide free education to HIV/AIDS orphans up to completion. UPE is not enough. The government should ensure that people are always educated about HIV/AIDS, in schools, in villages, communities, and nationally because people are ignorant about this epidemic (Francis, 85 years, Lira, Northern Uganda).

I think that poverty has been so instrumental in sustaining the impacts of HIV/AIDS. Many girls go with men with money. The government should fight poverty. Let government provide the elderly looking after orphans with financial help. Government should give a hand to the elderly persons looking after grandchildren whose parents died of AIDS. I call upon the government to set up a special fund to help HIV/AIDS orphans in educating and feeding. The government should distribute free condoms in villages, public areas and in all accessible areas for the young ones to use (Musa, 72 years, Kawempe, Kampala, Central region).

Table 4: Strategies suggested by key informants for addressing the impacts of HIV/AIDS on the older persons

Strategy	Count	%
Create HIV/AIDS centres providing free VCT, ARVs, and foods for HIV positive older persons	16	32.0
Mobilise resources and funds for facilitating HIV positive older persons	6	12.0
Government should provide support to orphans living older persons after their children have died of HIV/AIDS	8	16.0
Introduce gerontology courses in Uganda's institutions of higher institutions of learning	2	4.0
Intensify Mobilisation, sensitisation and awareness of HIV/AIDS and its impacts	23	46.0
Create NGOs for the older persons living with HIV/AIDS	2	4.0
Form support groups for the older persons living with or having grandchildren living with HIV/AIDS	2	4.0
Create/Encourage outreach programmes	2	4.0

Table 4 indicates that the strategies that most of the key informants suggested included: intensification of mobilisation, sensitisation and awareness of HIV/AIDS and its impacts (46%) and creation of HIV/AIDS centres providing free VCT, ARVs, and foods to the HIV positive elderly people (32%).

Discussion of Findings

Results indicate that elderly people in Uganda are faced with various adverse effects of HIV/AIDS. The most outstanding effect constitutes loss of close kin who painfully include most or all of their industrious adult children, spouses, and grandchildren. The loss of a child is a big blow because most elderly people look to their children as sources of care when they enter advanced age. This loss thus comes with adverse effects on the survival of the elderly people, especially in Africa where, according to Kollapan (2008), the children are considered as investment for the future of elderly parents. By killing some or all the children, HIV/AIDS effectively renders the affected elderly people hopeless (Alun, 2003). This explains why some of the elderly people reached the extent of perceiving themselves as living by the grace of God.

The far reaching adverse effect of HIV/AIDS revealed by the results was that after killing the children in whom the hope of elderly people rests, the epidemic created many orphans who had no one to turn to except the elderly people. This is also

pointed out in the work of Ainsworth and Dayton (2000), Kakooza (2004), Kollapan (2008), Rugalema (1999), Tavengwa-Nhongo (2004) and Kiiza-Wamala (2008). The thought of having a burden of looking after many orphans when elderly people cannot even fend for themselves is not only overwhelming but also humbling. It shows helplessness, which, if not addressed, can easily plunge elderly people into depression or other forms of extreme psychological stress. This explains why key informants showed that some elderly people in Uganda suffer from depression. The situation is worsened when the person is him/herself infected with the epidemic. Being infected with HIV/AIDS is associated with many illnesses, which become even worse when the infected person is feeding poorly. Results show that this was the case with Uganda's elderly people infected with HIV/AIDS because most of them fed poorly.

Generally, results suggest that HIV/AIDS exposed Uganda's elderly people to an enormous responsibility of looking after a large number of orphans. It also plunged many of them into helplessness, thereby causing some of them to suffer psychological illnesses. Accordingly, results call for the attention of government and nongovernmental organizations to address the plight of Uganda's elderly people who are affected and infected with HIV/AIDS.

Conclusion

The effects of HIV/AIDS on elderly people in Uganda are enormous; yet the mechanisms used to cope with them are inadequate. There is therefore need for appropriate intervention measures. HIV/AIDS needs to be curbed in a manner that will improve on the livelihoods of elderly people infected or affected by the disease. There is need to adopt strategies for providing adequate welfare and health services to the elderly people as well as economic support to the HIV/AIDS orphans under their care.

Recommendations

Following fore-discussed effects of HIV/AIDS on the elderly people in Uganda, I strongly concur with the recommendations advanced by HelpAge International (2008b) for the elderly. I specifically recommend that:

- All home-based care policies and programmes, including standards of care guidelines, must address the specific economic, health and psychosocial needs of elderly people infected or affected by HIV/AIDS and support them in their care giving roles.
- There is need to recognise nationally and internationally the role of elderly people by policies, programmes and budgets and involvement of elderly people in the design and implementation of policies and programmes particularly those addressing the plight of HIV/AIDS infected or affected older people
- The need for further research and collection of age and gender-disaggregated data, on infection rates and on access to treatment for people over 50 years of age. This will help design and implement HIV/AIDS policies and programmes that appropriately meet the rights and needs of the infected and affected elderly people.
- There is also a need to develop policies that support and assist elderly women who care for orphans and grandchildren.
- Older people's rights to food, shelter, land, equal recognition before the law and income should be realized so that they can support themselves and their dependents. Denial of these rights exacerbates psychosocial trauma which negatively affects their own well-being and their ability to care for others.

- Older people should be provided with the necessary support including legal advice, financial support and literacy programmes, in obtaining documentation needed to access entitlements for themselves and those in their care.

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PERCEPTIONS AND ATTITUDES OF HEALTH PROFESSIONALS TOWARDS PEOPLE WITH PHYSICAL DISABILITIES IN HOSPITALS IN THE WESTERN CAPE

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ABSTRACT

Introduction:

The attitude of health professionals has a direct influence on quality of care. The greatest problem that persons with physical disabilities experience at hospitals is that the health professionals attending to them exhibit inappropriate attitudes and behaviors. Hence, the aim is to determine the perceptions and attitudes of health professionals towards persons with disabilities at the five selected hospitals in the Western Cape.

Methodology:

This was a descriptive cross sectional study that used quantitative methods to collect data using a self-administered, validated questionnaire. The sample consisted of 107 conveniently selected health professionals from five hospitals in the Western Cape.

Results:

Seventy-five percent of health professionals demonstrated positive perceptions and attitudes towards persons with disabilities in hospitals.

Conclusion:

Health professionals have positive perceptions and attitudes towards persons with disabilities who were attending hospital.

Key Words: attitude, perception, disabled, health professionals

Introduction

In South Africa, 1.2% of the national and provincial population are physically disabled (Veltman, Steward, Tardif & Branigan, 2001). Some are dependent on the health care system, which means that health professionals play a major role in their lives, with their attitudes having a direct influence on the quality of care provided. When health professionals interact with persons with disabilities,

attitudes and feelings are reflected in the interaction. In general, the attitudes of health care professionals can influence how patients with disabilities feel about themselves as well as their progression with rehabilitation. Thus, attitudes of health professionals who work with people with disabilities influence the outcome of their treatment and rehabilitation. Persons with disabilities are often described as overly sensitive, self pitying,

helpless, dependent, easily discouraged, non-ambitious and expecting special treatment from others (Yuker, 1970). The perception and behavior of health professionals affects whether or not their attitudes towards the persons with physical disabilities are negative or positive (Al-Abdulwahab & Al-Gain, 2003).

Most allied health professionals (physiotherapists, occupational therapists, speech therapists, audioterapists, radiographers) and health professionals (nurses, doctors and pharmacists) have some contact with clients who present with physical disabilities. Various studies have determined the attitudes of health professionals as they relate to people with disabilities. According to Stachura and Garven (2003) and Al-Abdulwahab & Al-Gain (2003), occupational therapists, nurses and dentists showed a positive attitude towards those persons with physical disability. The authors further suggested that the reason for the positive attitude of occupational therapists may be based on the humanistic and holistic philosophy embedded in their curriculum. Al-Abdulwahab and Al-Gain (2003) also identified that occupational therapists, nurses and dentists had a positive attitude towards those persons with physical disabilities.

Persons with physical disabilities are more vulnerable to health problems due to their disabilities. Longorio and Marini (2006) and Wiman, Helander and Westland (2002) found that persons with disabilities have different medical needs from able bodied persons. These authors identified the following needs for people with disabilities that are more for able bodied people: preventative, curative, rehabilitative as well as assistive devices and counseling to obtain adequate health care services. Veltman et al. (2001) states that the greatest problem that persons with physical disabilities experience when accessing medical services at hospitals is that the health professionals attending to them exhibit unsuitable attitudes and behaviors, such as refusing to treat persons with physical disabilities. Research and anecdotal evidence suggests that the relationship between professionals and disabled people are varied but can be experienced as dehumanizing and abusive by disabled people (Swain and French, 2001). Research has shown that patients care more about the quality of their everyday interactions with health

professionals than about how the service is organized. According to Coulter (2005), patients in the United Kingdom reported that they want primary health care professionals who are interested and sympathetic and who involve them in decision-making. In this study, clients valued rapport issues more than therapists' technical skills. Caljouw, van Beuzekom & Boer (2008) argued that the disabled patients wanted health care professionals to give them sufficient time and attention and to provide advice on health promotion and self-care.

Poor communication between service providers and clients has been a major complaint from people with disabilities. Bowers et al. (1996) reported that clients identified communication with service providers as an important issue and that they were not given the opportunity to express their views. In this study the clients reported that service providers were not ready to listen and to consider the people with disabilities' knowledge, experience with and wisdom regarding their disability. Similarly, Swain and French (2001) reported that disabled persons with knowledge of their entitlements were frequently viewed as 'grabbing', demanding or fussy.

The service providers' attitude towards their clients is a major issue that clients talk about when they report their experiences of health care. According to Crisp et al. (2000) Australian disabled people perceived the attitudes of rehabilitation personnel as ineffectual and they reported concern about a lack of quality in their relationships with health and rehabilitation personnel. Bowers et al. (1996) reported that physically disabled persons expressed a high level of sensitivity to what they perceived as the unspoken cues that were conveyed by health care professionals in reaction to their physical presence. These included distancing behaviors such as avoiding eye contact, touching only when required by direct bodywork and sitting at a distance beyond what is perceived as appropriate for social interaction. However, Morris et al. (2007) reported contrasting findings whereby patients and careers praised the physiotherapists' positive attitude and reported high levels of commitment of the latter.

Literature generally concludes that the relationship between persons with physical disabilities and

health professionals affects the quality of treatment that persons with physical disabilities receive, as well as the response to treatment from people with disabilities towards the health professionals. Therefore, this study aimed to explore the perceptions and attitudes of health professionals towards persons with physical disability at hospitals in the Western Cape.

Methodology

The study utilized a descriptive, cross-sectional study design using quantitative methods of data collection. The study was conducted at five hospitals in the Western Cape, namely, Hospital A (tertiary hospital), Hospital B (primary hospital), Hospital C, D and E (secondary hospitals). All of the health professionals working in these hospitals were willing to participate in the study. Hundred and seven participants were conveniently selected to participate in the study. These included physiotherapists, occupational therapists, doctors, nurses, speech therapists, dieticians and radiographers. The inclusion criteria for this study were those participants who had had experience consulting clients who presented with physical disabilities. Some of the participants did not meet this criterion when analysis was done and the total number of participants who qualified was 107.

Data was collected using the Interaction with Disabled Persons (IDP) Questionnaire which is a self-administered questionnaire. It consisted of closed-ended questions that were used to collect data that would meet the objectives of the study (Gething & Wheeler, 1992). Section A of the questionnaire dealt with demographic information and Section B asked questions relating to perceptions and attitudes of health professionals. Perceptions and attitudes were measured using a four-point Likert scale.

Consent and ethical clearance was obtained from

the University of the Western Cape, the various departments at the five hospitals and the superintendents of each hospital. Informed written consent was obtained from the participants prior to participation in the study. They took part freely and were informed of their right to withdraw from the process at any stage of the project. Confidentiality and anonymity of the information provided was assured with pseudonyms to be used when the results were published. Data was analysed using Epi-Info. Descriptive statistics was used to report the findings.

RESULTS

One hundred and seventy five questionnaires were distributed and returned however, 68 had to be discarded based on limited information provided. Thus 107 participants (61%) formed the study sample. Of the 107 participants used for the results, 35.5% of the data was obtained from Hospital A, 19.6% from Hospital B, 18.7% Hospital D, 15.9% from Hospital C and 10.3% from Hospital E. The demographic information of the participants are presented in Table 1 below.

The majority of the participants (51%) were between 18-29 years. In addition more that 50% of the health professionals had been qualified for less than one year. Table 2 highlights the perceptions and attitudes of health care professionals working in different hospitals in the Western Cape.

Table 1 Demographic information

Variable	N (%)
Gender	
Male	16 (%)
Female	91 (%)
Age	
18-29 years	55 (%)
30-39 years	28 (%)
40-49 years	16 (%)
50-59 years	8 (%)
Years qualified	
0 years	58 (%)
1-5 years	9 (%)
5-15 years	31 (%)
15-25 years	9 (%)

Table 2 Perceptions and attitudes of health care professionals

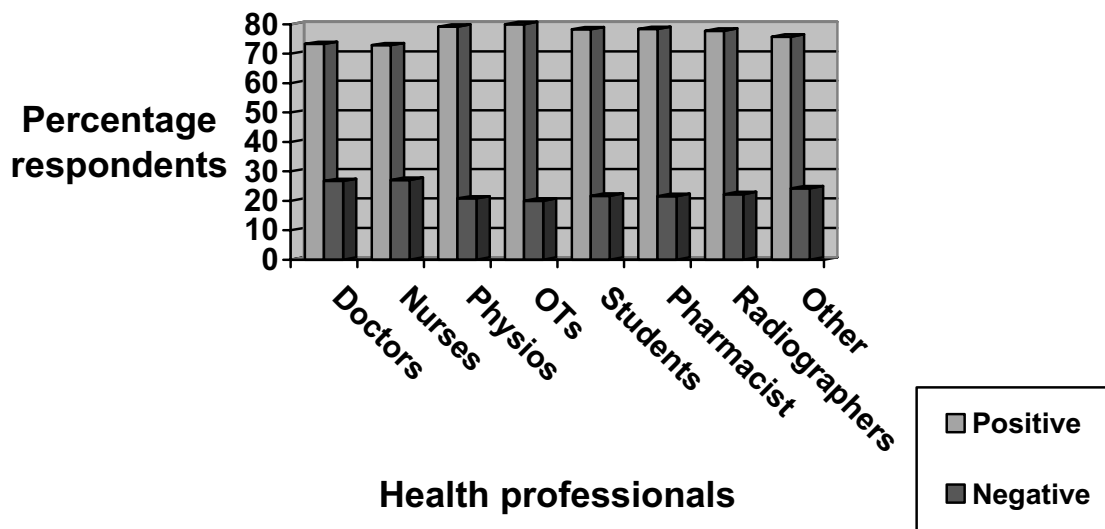
Item	Agree	Strongly Agree	Disagree	Strongly disagree
Helping people with disabilities	41%	56%	3%	0
Health professionals' understanding of Disability	69%	26%	8%	0
Burden of not facing disability	51%	26%	18%	5%
Health professionals cannot help starring at PWPD	9%	1%	55%	35%
Health professionals admire the coping abilities of PWPD	54%	45%	1%	0
Health Professionals hurt when observing PWPD struggling to do an activity	51%	17%	22%	6%
Health professionals thoughts of having a disability	59%	26%	14%	1%
Ignorance of health professionals towards people with physical disabilities	8%	0%	49%	43%
Health professionals when people with physical disability visit them frequently	53%	33%	11%	3%
Health professionals reminded of vulnerability when in contact with PWPD	53%	20%	23%	4%
Health professionals ignore disability when treating PWPD	45%	15%	29%	11%
Health professionals feel uncomfortable when in contact with PWPD	12%	1%	57%	30%
Health professionals are unsure when in contact with PWPD	11%	1%	59%	29%
Health professionals do not pity PWPD	49%	18%	28%	6%
Health professionals feel overwhelmed with discomfort when in contact with PWPD	23%	1%	46%	30%
Health professionals are afraid to look PWPD in their faces	45%	1%	54%	40%
Health professionals dread the thought of having a disability	42%	15%	32%	11%
Health professionals feel frustrated when they are unable to help PWPD	42%	15%	32%	11%
Health professionals spend less time with PWPD during consultation	8%	1%	52%	39%
Health professionals are at ease when discussing disability issues with PWPD	54%	11%	29%	6%

Figure 1 presents the percentage of health professionals who showed positive and negative emotions towards persons with physical disabilities. Eighty percent of occupational therapists showed positive emotions towards their patients, which was the highest percentage for all health professionals and 20% had negative emotions.

have a better understanding of the patients' needs.

The results indicated that even though health professionals have been qualified for many years and have many years of experience in managing patients with physical disabilities, they did not necessarily have more positive attitudes towards

Figure 1: Perceptions and attitudes of health professionals



Generally health professionals within the five hospitals showed positive perceptions and attitudes towards persons with physical disabilities. There were significant differences in each health professional's emotions towards persons with physical disabilities. An average of 78% of the health professionals had a positive attitude towards people with disabilities and an average of 22% had a negative attitude.

Discussion

Some of the participants in this study were still undergoing training and the majority of their ages ranged between 18-29 years old. This shows that the majority had limited experience treating patients with physical disabilities. It is also clear that the less experience participants (16%) had in managing persons with physical disabilities, the more time (45-60 minutes) they spent with their clients as more experienced professionals only 11% spend between 45 and 60 minutes. This may be so that they would

them (76%). Less experienced health professionals who are still undergoing training showed that they spent more time and have positive attitude during management of people with disabilities. Budisch (2004) says that even though health professionals have many years of experience they do not necessarily have positive attitudes towards patients with physical disabilities.

This study found that health professionals had a good background of disability management as they confirmed that in their training they were taught to treat patients with disabilities equally, professionally and holistically. Hence, the majority of them (76%) showed positive perceptions and attitudes towards patients with physical disabilities on initial contact.

Consultation with patients requires one to have patience and time to address the needs of an individual. Less experienced health professionals in this study spent more time during management of patients with disabilities compared to health professionals who had more experience. This time

constraint for the management of clients is due to patient load and staff shortages in hospitals. Conway (1995) says that even though nurses were trained to spend more time with their clients they still do not spend more time with the clients, especially if they are understaffed.

This study proved that regardless of the experience that health professionals have in managing clients with physical disabilities, the majority (75%) have positive perceptions and attitudes towards these patients and the minority (25%) have negative perceptions and attitudes towards them.

Conclusion

Health professionals in different professions showed little difference in their perceptions and attitudes towards persons with physical disabilities and all health professionals demonstrated much greater positive perceptions and attitudes towards patients with physical disabilities during management.

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The relationship between health risk behaviour and physical activity among High School learners in the Mtwarra region, Tanzania

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Abstract

Introduction:

Physical inactivity is one of the leading risk factors for major non-communicable diseases, which contribute substantially to the global burden of chronic diseases, disability and death.

Aim:

The purpose of the study was to investigate the relationship between participation in physical activity and health risk behaviour among high school students in the Mtwarra region, in the United Republic of Tanzania.

Method:

A descriptive quantitative study design was used whereby a stratified sample of the high school students, which included male and female students between the ages of 17 to 26 years. A self administered questionnaire was used following written participant and parental consent. The study measured health risk behaviour such as alcohol use, smoking cigarettes, drug abuse, sedentary lifestyle and sexual behaviour. Quantitative data was captured and analyzed using SAS 9.1 and Statistical Package for Social Sciences (SPSS) version 13.0 programmes. The Kruskal-Wallis` test was used to test the means between variables and the Spearman correlation coefficient test was utilized to test associations between variables related to health risk behaviour and demographic variables.

Results and Discussion:

Two hundred high school students with a mean age of 20.47 (SD=1.493) participated in this study. Of the total number of participants, 67% was not participating in physical activity. Furthermore, 26% smoked cigarettes, 93% consumed alcohol, 9.5% used drugs and 93% was involved in risky sexual behaviours. The study identified relationships between participation in physical activity and health risk behaviours. The youth involved in risky behaviours like consuming alcoholic drinks and smoking cigarettes were less physically active.

Conclusion:

The results of this study provide valuable information to relevant policymakers and stakeholders for the implementation of physical activity programmes in schools of the Mtwarra region, in the United Republic of Tanzania.

Keywords: Relationship, Physical activity, perceived benefits, health risk behaviours.

Introduction

The health consequences of inactive lifestyles of adults are well established. According to current World Health Organization (WHO) estimates, lack of physical activity leads to more than 2 million deaths annually worldwide (WHO, 2002). Statistics from the WHO (2002) show that the mortality is due to factors such as heart disease and stroke (50% of all deaths) and type 2 diabetes (50% of all occurrences). Other conditions created or exacerbated by the lack of physical inactivity include obesity, osteoporosis (leading to up to 50% of hip fractures in women); knee and back pain, stress, anxiety and depression (WHO, 2002). Booth (2000) concurs that physical inactivity is an established risk factor for cardiovascular disease, non-insulin dependent diabetes, overweight, hypertension, depression and anxiety.

According to Dr Luís Gomes Sambo, the director of the Division for the Prevention of Non-Communicable diseases at the regional office for Africa (AFRO), "physical activity need not be strenuous to promote health". He further stated that it should also not be seen as a "new" action but as a part of people's daily life settings and activities, such as walking, the most practiced and most recommended form of physical activity that is absolutely free (WHO, 2002). A study by Frantz (2005) conducted on high school learners in Belhar revealed that when physical activities are implemented, the chance for decrease in health risk behaviours such as engagement in sexual intercourse, drinking alcohol and cigarette smoking among youth increases significantly. The study further indicated that approximately 32% of the high school learners (n=951) in that community were physically inactive and 50% of them were not able to meet the norms for various health-related fitness tests. Frantz (2005) showed that the physically inactive learners (32%) were more likely to participate in health risk behaviours like smoking and drinking.

Physical inactivity in youth is associated with other health compromising behaviours. Jessor (1991) argues that an early age of onset of health risk behaviours is associated with an increased likelihood that adolescents will engage in multiple risk behaviours as they progress through adolescent stages.

Currently the situation worldwide is alarming where

an existing burden of infectious diseases is compounded by the HIV/AIDS epidemics (WHO, 2002b). The World Health Organization reported that in Africa, as elsewhere in the world, non-communicable diseases have become a major epidemic due (WHO, 2002b). This could be due to a rapid transition in lifestyle leading to reduced physical activity, changing diets and tobacco use (WHO, 2002b). Statistics from the Republic of Tanzania suggest that the prevalence of diabetes, hypertension and cardiovascular diseases are increasing, and mortality due to strokes is high (Swai et al., Kitange et al., 1993, Masau & Makene, 2004). A study to assess the behavioural risk factors associated with HIV infection among youth (17-26 years) in the Moshi rural district in Northern Tanzania showed that, 60% of youth reported to consume alcohol and 50% of the sexually experienced females reported to have received a favor for their sexual encounter (Tengia-Kessy, Msamanga & Moshiro, 1998). Whilst working in the Mtwarra region, the researcher gained first hand knowledge that the lifestyle among youths in High Schools of the Mtwarra region, in Tanzania is characterized by a number of health risk behaviours which includes alcohol consumption, cigarette smoking, use of dangerous drugs of addiction, practicing unsafe sex, and a sedentary lifestyle. The purpose of this study was to investigate the relationship between health risk behaviour and physical activity among high school learners in the Mtwarra region, Tanzania.

Method

Permission to carry out the study was obtained from the Senate Higher Degrees Committee at the University of the Western Cape. The purpose of the study was explained to the Ministries of Education and health and the principals of the three schools in Tanzania. Permission was granted by these authorities. Following a clear explanation of the purpose of the study as well as stating that all the rights of the participants will be strictly adhered to, written consent was obtained from the participants and their parents. This study made use of a cross-sectional descriptive quantitative research design. The study was conducted at the three high schools located within the Mtwarra region, in the United Republic of Tanzania. Two schools are government institutions and one is private. At the time of the

study, 875 students were enrolled in these high schools. A stratified random sampling technique was used to select the sample and the study sample comprised of 200 participants aged between 17 and 26 years.

Items from a reliable and validated questionnaire from the instrument by the World Health Organization to assess the level of physical activity and health risk behaviours in Tanzania in 2004 titled: 'Global School-based student health survey

variables (such as health risk behaviour and a participant's physical activity level) and it was reported in terms of Chi-square and p-values.

Results

All two hundred questionnaires distributed were completed by the participants of the three high schools of the Mtwarra region, Tanzania. Table 1 summarizes the characteristics of the participants.

Table 1 Students demographic characteristics (N=200)

Variable Measured	Characteristic	Frequency	Percent	Mean age	Standard deviation
Age	17	1	0.5	20.47	1.493
	18	14	7.0		
	19	36	18.0		
	20	63	31.5		
	21	37	18.5		
	22	32	16.0		
	23	13	6.5		
	24	2	1.0		
	26	2	1.0		
Gender	Male	104	52.0	1.48	0.501
	Female	96	48		
Class	Form Five	87	43.5	1.57	0.497
	Form Six	113	56.5		

(Tanzania GSHS Questionnaire, 2004) were used. The items included questions on health risk behaviour and physical activity such as: "What kind of activity are you involved in"; "During your school year were you taught in any of your classes the benefits of physical activity"; "Have you ever smoked cigarettes"; "During your life, how many times did you drink so much alcohol that you were really drunk". Items not pertaining to the study were excluded. The self administered questionnaire which assured confidentiality and anonymity was distributed to the participants. The Statistical Package for Social Science (SPSS) version 13 and SAS version 9.1 were then used to analyze the data. The descriptive data was presented using frequency tables, pie charts and bar graphs. The inferential statistics in a form of cross-tabulation was done to determine the association between

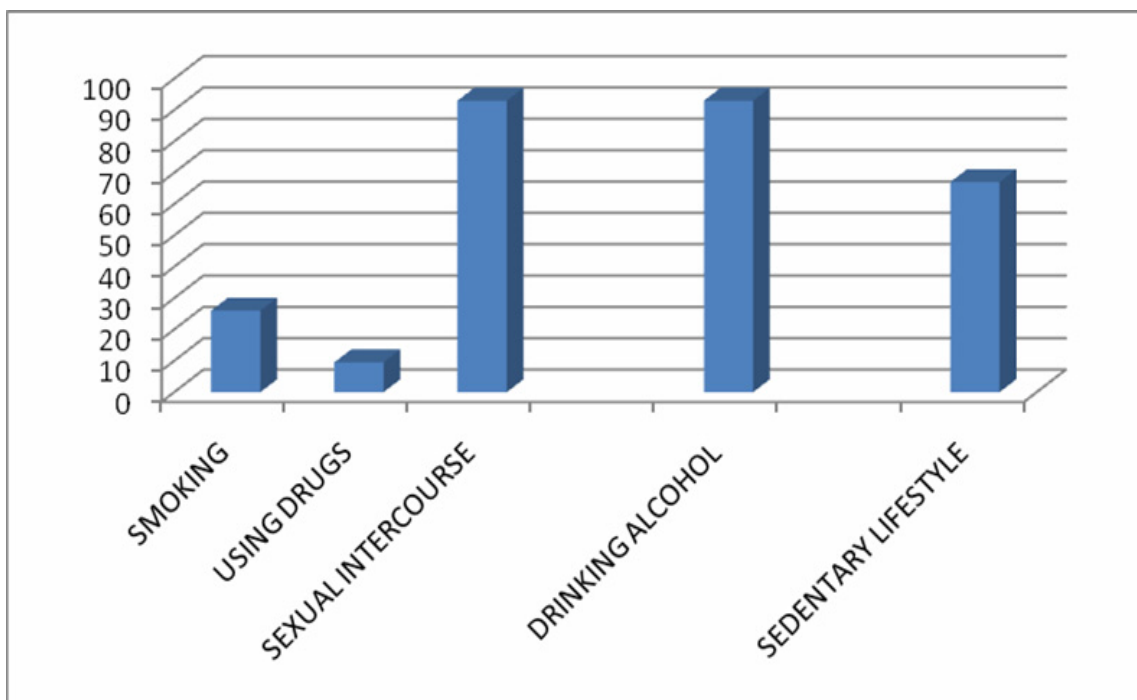
The study sample consisted of 52% males with a mean age of 20.47 years. Most of the participants were in form six.

HEALTH RISK BEHAVIOURS AMONG HIGH SCHOOL STUDENTS IN MTWARRA REGION, TANZANIA

The study investigated whether participants engaged in Health Risk behaviors such as smoking, drinking alcohol, using drugs, engaging in unprotected sex and living a sedentary lifestyle. Figure 1 highlights the distribution of participants' participation in health risk behaviors.

Twenty six percent of the participants engaged in smoking cigarettes, whilst 9.5% used drugs such as

Figure 1 Health risk behaviors among high school students in Mtwarra region, Tanzania (N=200)



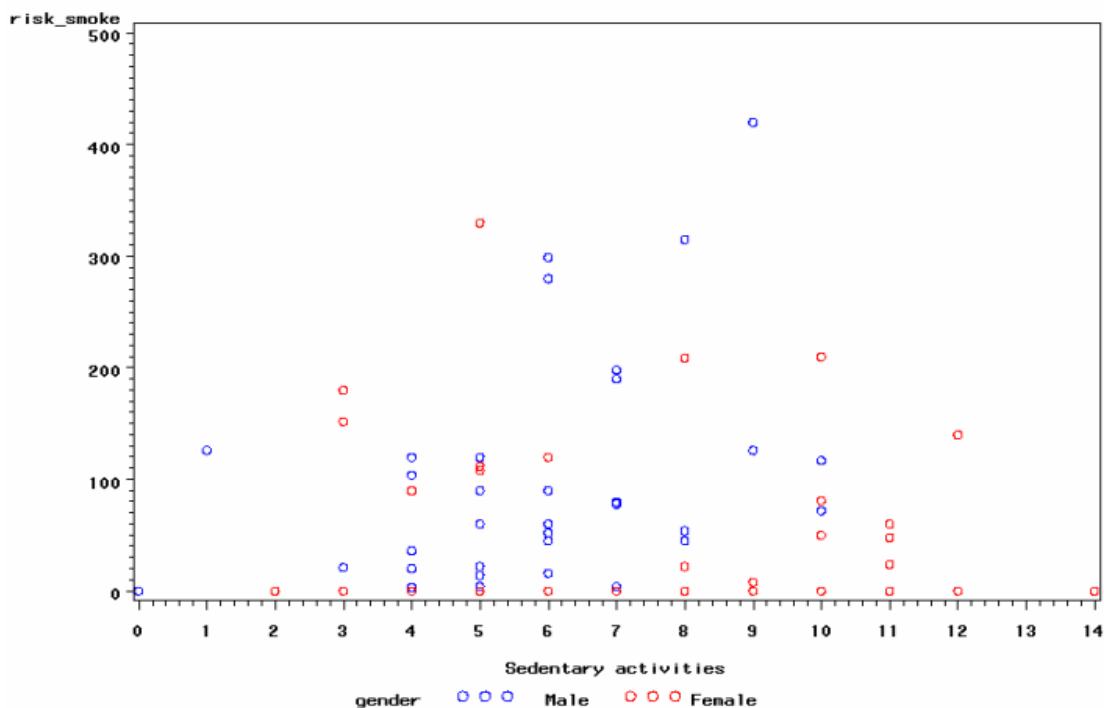
bhangi/cocaine, 93% practiced sexual intercourse, 93% consumed alcohol and 67% had a sedentary lifestyle.

THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND HEALTH RISK BEHAVIOURS

Figure 2 below illustrates the relationship between gender, sedentary activity and smoking behaviours

Figure 2 Relationship between smoking and sedentary activity.

Relationship between level of activity and risk behaviors



among the participants. The scatter plot shows that as the habit of cigarette smoking increases, the higher the level of inactivity among participants.

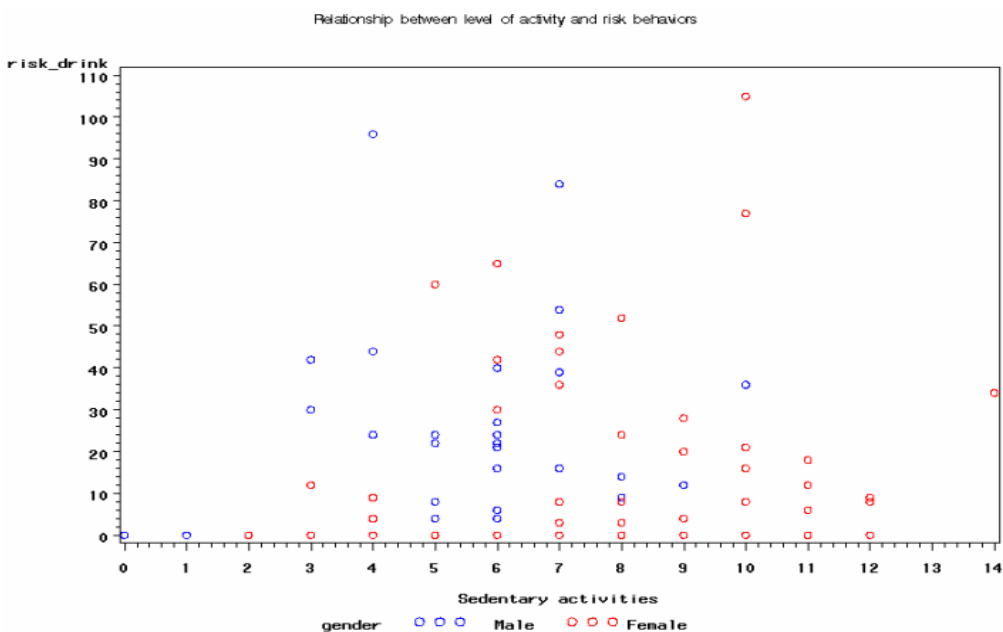
Figure 2 Relationship between smoking and sedentary activity.

Using the Spearman Correlation Test, the study found that among males a weak positive relationship did exist with risk behaviour using drugs (0.2059) and a strong relationship with sexual intercourse (0.67040). However for the female participants a very weak positive relationship existed between sedentary activity and the following health risk behaviours: smoking (0.2429), using drugs (0.3447) and sexual intercourse (0.0399).

Figure 3 depicts that as the participants alcohol intake increased the level of inactivity increased. Females were more severely affected than males.

(Muscari, 1999). Health risk behaviour intentional or unintentional is usually established during youth and extended into adulthood and that contributes to the leading causes of mortality and morbidity (Kann 2000). The results of this current study show that of the 200 participants a high prevalence of participation in alcohol consumption (93%), sexual activity (93%) and unsafe sex (53.5%) existed amongst the participants. The results further indicate the important associations between health risk behaviours and physical activity. On assessing the health risk behaviours of participants (smoking and drinking), it was found that 26% of those who reported that they smoked and 60.5% of those who consumed alcohol did not meet the requirements to be classified as physically active. On applying the criteria recommended by the World Health Organization (WHO, 2003c) to assess the respondents level of participation in physical activity it was found that 67.0 of the participants were sedentary, 28.5% of the participants were moderately active and only 4.5% were classified as

Figure 3 Relationship between drinking alcohol and sedentary activity



Discussion

Literature has indicated a number of lifestyle behaviours which account for most of the mortality, morbidity and social problems among adolescents. These behaviours include excessive tobacco use, physical inactivity, alcohol consumption and other drug use, risky sexual behaviours and behaviours that result in unintentional or intentional injuries

physically active. In a study by Phillips (2001) it was found that the motivation to engage in smoking differed between adolescent girls and boys (Phillips, 2001). In a study by French, Perry, Leon and Fulkerson (1994) done in the urban areas of the Midwest, United States of America (USA) it was found that adolescent girls may use smoking as a weight control strategy. According to Killen,

Robinson and Haydel (1997) higher levels of sociability were found to influence smoking onset in girls.

It can be surmised that smoking and drinking can have a great impact on physical activity or more so inactivity. The lack of physical activity could further be re-inforced by an increase in health risk behaviour practices which may predispose adolescents to chronic disease later in life. These leading diseases share key risk factors such as tobacco use, unhealthy diets, lack of physical activity and alcohol use (WHR 2002). Evidence suggests that people who are active when they are young are more likely to become active in later life (Corbin & Pangrazi, 1994)

The outcome of this study thus suggests that the problem of physical inactivity in the Mtwarra region should be of great concern as it places the participants at a higher risk of developing chronic diseases of lifestyle as they grow older especially due to the fact that the participants in the study stay on hostel and therefore are not obliged to walk to school or partake in normal household chores which predisposes them to physical activity.

Conclusion

The research question focused mainly on the relationship between participation in physical activity and health risk behaviours among youth in the Mtwarra region, Tanzania. The results suggest that health risk behaviour has a great influence on the lack of participation in physical activity. The participants engaged themselves in health compromising behaviours at a level that warrants or justifies the development and implementation of responsive prevention and intervention strategies.

The majority of the youth in this study have a sedentary lifestyle whilst also engaging in health risk behaviours. This predisposes them to Chronic Diseases of Lifestyle (CDL) as cardiovascular diseases, type 2 diabetes mellitus, osteoporosis and osteoarthritis. The impact of increased CDL might result in future health challenges to the Tanzanian youth and also to the country which is still struggling with many problems including poverty, non-communicable diseases and HIV/AIDS. The health risk behaviours reported to

be participated by the participants were smoking cigarettes, drinking alcohol, practicing unprotected sexual intercourse and using drugs.

This study highlights the need to plan intervention programmes that are aimed at promoting physical activity in order to combat health problems that may arise in the future.

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Musculoskeletal pain in hairdressers- a study in Durban

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Abstract

Introduction:

Research on occupation related pain and dysfunction is gaining momentum. Hairdressing salons are now owned by small entrepreneurs. The occupation related musculo-skeletal pain in hairdressers has not received attention in South Africa. This study investigated the prevalence and predictors of musculoskeletal pain in hairdressers in the Durban area.

Methods:

A cross sectional survey allowed 110 consenting hairdressers to participate. A questionnaire captured all relevant demographic and pain /dysfunction information. Height and weight of each hairdresser was taken using a tape measure and bathroom scale. Data was analysed using Pearsons correlation and predictors identified by linear regression.

Results:

Response was 68%. Musculoskeletal pain was prevalent in 60% of the participants and 89% of this was mechanical. Forty percent reported low back pain. Type of bending, and position of arms were significantly correlated with the presence of pain and predictors of pain.

Conclusion:

Musculoskeletal pain is significantly prevalent in the study population.

Key words: Hairdressers, pain, bending, position of arms

Introduction

The human body is aligned to ensure that the bodyweight is distributed to prevent stress on any one part. Stress on any one part will eventually result in pain and dysfunction. During normal function or occupational activities various environmental factors impact on the alignment of the body or the components that maintain the structural balance. Any factor that affects the ability of a muscle or ligament to support a joint or body part or counter balance any strain will result in an altered alignment and subsequent pain and dysfunction. In any occupation where the muscles and ligaments are overused, overstretched or expected to function in a position for too long, pain ensues (Arokoski, Juntunen, & Luikku, 2002; Juul-Kristensen, Hansson, Fallentin, Andersen, & Ekdahl, 2001; Shabnam, Jaafar, & Fakher, 2009).

Back, neck and shoulder pain are common consequences of poor occupational ergonomics (McFarlane, Thomas, Papageorgiou, Croft, & Jason, 1997; Shabnam et al., 2009). A strong correlation between back pain and occupational stress in jobs which involve prolonged periods of sitting or repeated and sustained bending, twisting or lifting, has been reported (Shabnam et al., 2009; Arokoski et al., 2002). The musculoskeletal complaints of hairdressers are attributed to poor work postures, repetitive movements and lack of ergonomic equipment in the work environment (Arokoski et al., 2002; Veiersted, Gould, Osteras, & Hansson, 2008)

Hairdressing is an occupation that involves long working hours, many of which are spent in ergonomically inefficient postures (Arokoski et al.

2002). Arokoski et al., (2002) showed a correlation between neck, shoulder and back pain and posture in hairdressers. These investigators went on to show that a program of education and rehabilitation resulted in a 40-45% decrease in the incidence of back and neck pain in this population. In Taiwan, research has confirmed that more than 90% of the hairdressers complained of shoulder pain, over 80% of back pain and over 70% of neck pain (Fang, Chen, Fang, & Xu, 2007; Chuang, 2005). Hairdressers subject their shoulders, backs and necks to repetitive and sustained loading on a daily basis. In addition these professionals work with their backs bent or bent and twisted and with their arms above shoulder level (Nevala-Puranen, Halonen, Tikkanen, & Arokoski, 1998).

Van Dillen et al., (2003) argued that if movements are performed at the optimal kinesiologic standard position, tissue damage doesn't occur. The effect of repeated movements and sustained postures modify the kinesiologic model so that it becomes a kinesiopathologic model (Shabnam et al., 2009).

Hairdressers are found everywhere. In South Africa, anecdotal evidence suggests that hairdressers suffer from back and neck pain. More reports can be found in the scientific literature about hairdressers and their musculoskeletal pain (Arokoski et al., 2002). The majority of the studies were undertaken in Scandinavian countries (Arokoski, Nevala-Puranen, Danner, Holhalonen, & Tikkanen, 1998; Arokoski et al., 2002; Nevala-Puranen et al., 1998; Veiersted et al., 2008) or Taiwan (Guo, 2002; Lin, 2003; Chuang, 2005). The purpose of the present study was to determine the prevalence of musculoskeletal pain and its predictors in hairdressers in the greater Durban area. This study also sought to determine the location of the pain, and what factors if any were related to the pain

Methods

A cross sectional survey on pain and its predictors in hairdressers in Durban was conducted. A sample of convenience was obtained by telephoning as many hairdressers as possible in the Durban area (through the use of a telephone list obtained from the telephone directory). African hairdressers who did not own telephones were accessed in the city

business district. Female hairdressers between the ages of 20 to 60 years (mean = 32 years) were invited to participate since some literature indicated that more female hairdressers suffered from musculoskeletal pain (Loodh & Ohlson, 1997). Race ratios were based on the latest census information for the region namely 80% African, 10% Indian, and 6% White. Any subject with leg length discrepancy, arthritis, pre-existing neck and back injury sustained as a result of non-hairdressing activities or pregnancy was excluded.

After obtaining institutional ethical approval every participating subject signed a fully informed consent form. Each subject completed a questionnaire (based on anecdotal information from hairdressers) which elicited information about any medical condition, some relevant personal information namely leisure time activities, number of children, marital status, history of pain, time spent in a standing or sitting position and ergonomics of their task. Subjects completed their questionnaires in their salons, with the researchers on standby to clarify any question. The questionnaire was piloted on 5 non-participating hairdressers to ensure that all the relevant questions to achieve the aims of the study were covered. No expert opinion was obtained because the hairdressers were considered to be the best people from whom content validity could be ascertained.

The researchers used a non-elastic measuring tape to measure the heights of each hairdresser with shoes off. A bathroom scale, calibrated using dumbbells and weights within the weight range (40 to 120 kg) of the participants was used to measure body weight in kilograms. Three readings were taken and the highest reading was used as data. A builder's level was used to ensure that the bathroom scale was placed on level ground in each salon. Body mass index was calculated using the height and weight data. Pain was classified as mild (1-3), moderate (4-6) or severe (7-10) on the numerical rating scale (Jacques, 2009). Site of the pain was also requested. Position of the arms during hairdressing was classified as above shoulder level or below shoulder level. Bending was classified as bending using the back, or hips and knees. Pain was identified as being of mechanical origin or other (inflammatory or ischemic) and whether it arose out of activities outside

hairdressing. To determine whether the pain was mechanical, subjects were asked whether their pain was aggravated by movement and eased by rest (Petty and Moore, 1998)

Data was first analyzed descriptively by converting them into percentages. Pearson's Chi Square tests and correlations were used to determine the relationship between pain and selected variables such as age, race, body mass index, hours spent working per week, position of the arms, bending type, hand dominance and smoking. Linear regression allowed for the identification of predictors of pain in hairdressers. Probability was set at $p < 0, 05$.

Results

Out of 200 hairdressers that were contacted 110 females volunteered to participate in this study. Of these, 75 returned their completed questionnaires and allowed measurement of the identified parameters, resulting in a 68% return rate. Sixty five percent (49) of the participants were Black, 17% (13) Indian, 6% (5) Coloured and 11% (8) White. The participants' age ranged from 20 to 63 years with a mean of 32 years. As shown in Table 1, 85% of the participants were less than or equal to 40 years of age.

participated in sport and other recreational activities. Seventy three percent of the participants were sedentary. A sedentary lifestyle correlated significantly ($p = 0, 03$) with body mass index (BMI) mass index (classification by the World Health Organization suggests that persons with a BMI between 25- 29, 99 Kg/m² are overweight and >29, 99 as obese) which correlated significantly ($p=0, 02$) with the position of the arms during the task of hairdressing. In this study 31 % of the participants were overweight and 21% obese. Twenty eight percent of the hairdressers reported being smokers and 24% had young children (less than 15 years of age). Of the hairdressers who smoked, 71% complained of pain, while 56% of the non- smokers complained of pain. No relationship existed between smoking and pain but smoking. Ninety one percent of the participants spent more than 75% of their working day standing.

Sixty percent of the participants experienced some pain in the back, or neck or both as shown in Figure 1.

Eighty percent of the participants who reported pain presented with mild pain (1-3), 17% had moderate pain (4-6) and three percent had severe pain (7-10). More hairdressers (93%) who stood for 75-100% of the time complained of pain compared to those who stood for 50% (6%) of the time. A significant

Table 1: Participant information (n=75)

Race	Age (n= 75)		No. of Smokers	Hours worked /week		Number active	No. with pain
	≤40	> 40		≤40	>40		
African	42	7	10	7	42	14	27
Indian	13	0	6	3	10	5	10
Colored	3	2	2	2	3	2	1
White	6	2	3	3	5	7	7
Total	64 (85%)	11	21 (28%)	15 (20%)	60 (80%)	28 (37%)	45 (60%)

The majority of the participants (80%) worked more than 40 hours per week Hours spent working per week correlated significantly ($p=0,002$) with the manner in which participants bent during their tasks, using their backs rather than their hips and knees. Thirty seven percent of the hairdressers

correlation was found between time spent standing and pain ($p=0,002$). Sixty one percent of the participants had to bend forward for 50% or more of the time. About 80% of these hairdressers complained of pain. A significant correlation existed between the manner in which participants bent

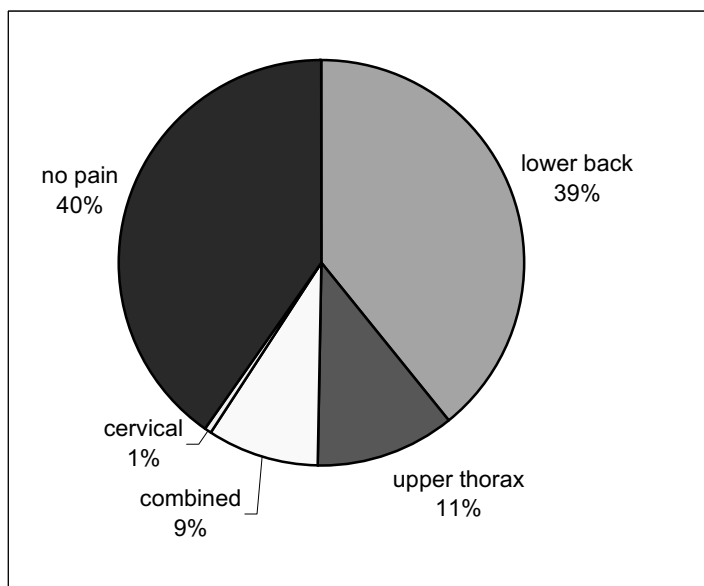


Figure 1 : Pie graph showing proportion of participants with pain in specific areas of the back.

(using their backs) and hours worked per week ($p=0,002$), pain ($p=0,000$), site of pain ($p=0,000$), severity of pain ($p=0,000$) and position of arms ($p=0,02$).

The prevalence of pain was significantly lower in those hairdressers who sat on ergonomically adjusted chairs. Significantly more (87%) of those who worked with their arms at or above shoulder level complained of back pain. Position of arms during hairdressing correlated significantly with age ($p=0,04$) pain ($p=0,00$), site of pain ($p=0,00$), severity of pain ($p=0,00$) and bending type ($p=0,02$). Position of the arms was a predictor for pain in hairdressers. Position of arms was related to body mass index ($p=0,02$) and race ($p=0,04$).

Only 12 of the 75 participants practiced their profession using ergonomically constructed chairs. Of these 16, 7% complained of back pain.

In summary, smoking, hours spent working per week, type of bending and position of the arms during hairdressing were significant predictors for pain in hairdressers.

Discussion.

Musculoskeletal pain is commonly associated with

muscle weakness, imbalance, injury, poor posture, habits and body mechanics during everyday activities and occupations. It may be a symptom of the ageing, inactive or overactive body but it does not spare anyone, regardless of age or gender. More studies are focusing their attention on musculoskeletal pain in hairdressers (Arokoski et al., 2002; Nevala-Puranen et al., 1998; Veiersted et al., 2008; Guo, 2002; Lin, 2003; Chuang, 2005). In South Africa, no published evidence of research on musculoskeletal dysfunction or pain in hairdressers exists despite it being the third highest risk for occupation related back pain in Taiwan (Guo, 2002). In South Africa hairdressers can begin their business with minimal equipment on a street corner or run exclusive highly rated salons. Regardless of the sophistication of the venue, the motions involved in carrying out the task are essentially the same, posing the same risks. However, the volume of work requires the hairdresser to consider the ergonomics of the furniture used as well as the body mechanics involved to ensure a pain-free career.

This study found that 60% of hairdressers who participated in the study experienced back pain. This is lower than that reported from Taiwan (Chuang, 2005; Fang et al., 2007). Research in Scandinavian countries placed more emphasis on

shoulder pain since working with the arms above shoulder level posed a great risk for shoulder pain (Nevala-Puranen et al., 1998). The participants in our study also worked with their arms above shoulder level for significant periods of time. A significant correlation existed between reports of back pain and working with arms above shoulder level.

When smoking was combined with a chronic cough there was more likelihood of the individual developing back pain (Levangie, 1999; McFarlane et al., 1997). Coughing increases intradiscal pressure and when combined with poor postures and long-standing strain on ligaments, and muscles, back problems are inevitable (Levangie, 1999). Cough as a risk factor for musculoskeletal pain in hairdressers was not addressed in any of the published literature on this topic. In the current study, coughing was not reported by the participants even though 71% of the 21 smokers complained of pain.

A significant proportion of the participants complained of back pain which is consistent with the unacceptable ergonomics of the furniture used as well as the poor attention paid to body mechanics during the tasks undertaken during lifting, bending and twisting (Arokoski et al., 2002; Guo, 2002). Prolonged standing was associated with back pain similar to the study by Omokhodion, Balogun, & Ola-Olorun (2009). Bending was more strongly associated with pain in this study. As the proportion of time spent bending forward using the back, to perform their tasks increased, the proportion of participants who complained of back pain increased. Bending incorrectly places mechanical strain on the posterior longitudinal ligament, which results in stress on the facet joints thereby resulting in pain. In addition, muscle fatigue will result in injury and imbalance (Waddell, 1998).

More hairdressers who stood for 50-100% of the time complained of pain compared to those who stood for 50% or less of their work time. Bennett, Gillis, Romanow, & Sanchez, (1989) reported greater activity in the erector spinae muscles during standing compared to sitting. If this activity is sustained for long periods e.g. a full working day then fatigue is likely to ensue and result in injury

and pain. Activities that require sustained forward flexion of the spine result in increased electromyographic activity of the spinal muscles (Bennett et al., 1989). The incidence of back pain was significantly lower in those hairdressers who sat on ergonomically adjusted chairs. An ergonomically correct chair is easily adjustable and maneuverable and allows for easy and regular changes in posture, thereby breaking the chain of a sustained position. Position of the arms also affected the prevalence of back pain. Significantly more (87%) of those who worked with their arms at or above shoulder level complained of back pain. Use of the arms above shoulder level was reported as a risk factor for shoulder, back and neck pain by Arokoski et al., (2002) and Fang et al., (2007).

Putative evidence shows that performing a particular movement more often than others may expose the muscles to strain and thereafter injury. Ischaemic pain may also result due to poor circulation in the overused area where toxic waste products may accumulate. Arokoski et al., (1998) have shown that correctional measures aimed at encouraging hairdressers to work with arms below the shoulder level reduced the incidence of back pain by 40-45 %. The significant prevalence of pain in hairdressers who undertook their tasks in standing may confirm this. An ergonomically designed chair for a hairdresser should allow for easy adjustability and maneuverability and allow regular changes in posture. The chair should have an adjustable backrest to support the normal lumbar lordosis. The height of the chair should be sufficient to allow the feet to rest flat on a surface with the thighs horizontally supported. The seat pan should be horizontal or anteriorly tilted to ensure normal tilt of the pelvis and lordosis of the lumbar spine.

Significantly more participants complained of low back pain. Incorrect body mechanics during tasks such as bending, turning and focusing on the task of ensuring an optimal haircut/style places stress on the highly mobile lumbosacral or the lower cervical joints. Due to the nature of the task, greater stress induced loading could be affecting the lower back more than the cervical joints hence the greater incidence of low back pain (Guo, 2002). In addition the nature of the task, which includes long hours of repetitive movement in sustained postures, may

also be a precursor to overuse strain and injury (Van der Windt et al., 2000).

Conclusion

This study has shown that the prevalence of back pain in hairdressers is significantly high. In addition, hours worked per week, smoking, and position of arms during the task and type of bending were predictors of pain in hairdressers. Since this study focused primarily on pain, there is a need for more in-depth studies to identify additional risk factors in this patient population. This could inform the development of specific preventative programs for hairdressers especially when hairdressing seems attractive as a career to the increasing number of unemployed South Africans. Physiotherapists could initiate and support this need.

The limitations of this study include the scope of the questions covered in the study, the sample size as well the qualitative aspects of the quality of life of the participants which could have been explored.

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Writing a case report for publication

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ABSTRACT

Introduction:

Research has become an integral part of all health care practitioners. Finding effective ways of sharing the valuable work that is being done in the clinical setting is essential. A case report is a form of communicating information to other health care practitioners regarding exceptional cases.

Aim:

This paper aims to describe the importance and role of case reports in the literature and summarise the guidelines for doing a case report.

Method:

A literature search was conducted in Pubmed and Medline using terms such as case reports, publishing, and guidelines to determine successful literature that highlights how to write a case report. Case reports will contribute to the body of evidence needed for professions and could stimulate debate around controversial issues. A summary of the relevant information needed to write a good case report for publication based on the literature is summarised in order to facilitate the process for new authors.

Conclusion:

Case reports if written in a scientific manner, can make a valuable contribution to research.

Key words: case reports, guidelines, health care practitioners

Background

Case reports have been a common feature in health literature. According to Cohen (2006), case studies can make a valuable contribution to research and education by providing essential

information for the optimal care of patients, even though they tend to be low on the hierarchy of evidence (Table 1). Readers of case studies are able to learn through identifying with the information provided about the patient and relate it to similar

Table 1: Hierarchy of evidence

Level	Type of evidence
Level 1	Meta-analysis of multiple controlled studies
Level 2	Experimental studies
Level 3	Quasi-experimental studies such as non-randomised, controlled single group pre-post test, cohort, time series, matched case-controlled studies
Level 4	Non-experimental studies e.g. comparative and correlational descriptive research, qualitative studies
Level 5	Program evaluation, case reports
Level 6	Expert opinions

cases. According to Aitken and Marshall (2007), case studies should contain a strong educational message which could include aspects such as “raising awareness of an issue, outlining a new condition, and clarifying different aspects of conditions”. The aim of this paper is to provide a guideline for writing case reports.

What is a Case Report?

A case report is the documentation of a unique, unusual, or newsworthy scientific observations for the purpose of education and research. Cases used in case reports should possess a notable deviation from the current clinical understanding and observations of health care professionals (Cohen, 2006). They should also strive to advance the general understanding of the disorder in question, improve clinical skills, and/or introduce suggested research. Authors of case studies should review the guidelines of the journal to which they plan to submit for specific requirements, including word limit, formatting of the text and references, and patient consent forms.

Why do a Case Report?

The use of the phrase “publish or perish” is becoming increasingly relevant to all academics but is also relevant to health care practitioners. In higher education, tertiary institutions in South Africa receive funding for published material and health care practitioners are able to share innovative management strategies through publication. Few health care practitioners in private practice will have the opportunity to be involved in clinical trials or do research on a large scale but writing a case report is possible for any health care practitioner (Pierson, 2004). Case reports can be used for educational purposes providing an enormous amount of clinical

information about a valuable lesson from practice; they can describe a diagnostic or therapeutic dilemma or present important information on an adverse reaction to a particular form of treatment (Iles & Piepho 1996; Cohen 2006) . In addition when health care professionals and clients differ in their understanding of what is right or wrong, an ethical dilemma may arise. Such dilemmas occur in everyday clinical practice and a case report may be an excellent manner for health care professionals to analyze these dilemmas and stimulate debate. Additionally, case reports can also suggest the need for a change in practice or clinical reasoning in terms of diagnosis or prognosis. If a patient has presented in clinical practice with an unusual or interesting disorder, it can be helpful to capture this in a case report.

The Steps in Writing a Case Report

According to Green and Johnson (2006), getting a case report published should not be difficult but the authors request that when writing a case report specific attention is paid to the different sections. The different sections are detailed below.

Ethical considerations:

If you feel you would like to write a case report, written and signed consent should be obtained initially from a patient or their guardian. Obtaining consent is mandatory for some journals, but if consent isn't mandatory, it is important to realise that this is a demonstration of good practice. If you decide to do a case study retrospectively i.e. once the patient has been discharged, it is advised to obtain the permission of the patient to use the information. Ensure the patient that confidentiality will be ensured and all of the information relating to the patient in the case report will be anonymised to prevent the patient's identity being revealed.

Table 2: Background information for a case report

No	Information needed
1	Identify a patient or case that is worth reporting
2	Search the literature for similar cases and their findings
3	Determine the educational message that you wish to convey
3	Obtain consent from the patient
4	Collect all relevant information form patient records regarding patient history, examinations requested and results

Preparing for the case report

A case report may be written retrospectively or prospectively. Both have their advantages and disadvantages but the usefulness of both types

of reports can be facilitated with careful planning. Once a suitable patient has been identified, there are certain steps to follow. A literature search, with a focussed research

Table 3: A suggested checklist for writing case reports (Cohen 2006; Green & Johnson 2006)

Title:
Find an appropriate title based on literature that should not be too long but is clear what the article is about
Abstract:
<ul style="list-style-type: none"> • Introduction and objective • Case report • Discussion • Conclusion
Introduction:
<ul style="list-style-type: none"> • Briefly describe the case and state the purpose of the case report • Describe whether the case is unique. If not, does the case have an unusual diagnosis, prognosis, therapy or harm? • Provide background information and justify the merit of the case by using the literature review • Describe the strategy of the literature review and search terms used • Introduce the case to the reader and describe how the case contributes to scientific knowledge. • Describes the instructive or teaching points that add value to this case. • Make the introduction concise and less than 3 paragraphs • How the case information impacts on care should be emphasised
Description of the case
<ul style="list-style-type: none"> • Describe the case in a narrative form • Describe the history, examination and investigations adequately. Is the cause of the patient's illness clear-cut? What are other plausible explanations? Provide patient demographics without providing patient identifiers. Describe the patients complaints. • Describe the treatments adequately. Have all available therapeutic options been considered? Are outcomes related to treatments? • Provide the patients events in a chronological order • Ensure the patient case presentation provides enough detail for the reader to establish the case's validity. • Ensure that the information is provided in a logical manner
Discussion
<ul style="list-style-type: none"> • Report a literature review of other similar cases. Describe how this case is different. Critique the outcome of the case presented effectively • Explain the rationale for reporting the case. What is unusual about the case? Does it challenge prevailing wisdom? • List the limitations of the case report and describe their relevance • In the future, could things be done differently in a similar case?
Summary
<ul style="list-style-type: none"> • Summarise the most important features of the case report • Justify the uniqueness of the case • Draw recommendations and conclusions • Ensure that the educational message is clearly integrated

question, should be carried out using suitable databases e.g. Medline, PubMed or Ebscohost or a search engine e.g. Google scholar. A summarised account should be written including a patient's history and initial presentation. The examination(s) and investigations that have been requested or already conducted (if appropriate) and their results (both negative and positive findings), treatment and management strategies undertaken and the outcome of treatment should also be reported. The patient's notes can be used to recall these details. Previous treatment and the outcome of any previous treatment should also be included. Table 2 summarises the background information for a case report.

What to include in a case report

Case reports should generally encompass the following five sections: an abstract, an introduction and objective with a literature review, a description of the case report, a discussion that relates the case to the evidence base, a summary of the case, and a conclusion (McCarthy and Reilly, 2000). Aitken and Marshall (2007) indicated that case reports should be "factual, concise and logically presented". Table 3 provides a checklist summarising the information that needs to be included under each section (Aitken & Marshall, 2007; Cohen, 2006; Brodell, 2000).

What to avoid when preparing a case report

Avoid lengthy lists of patient data, aim to be short with precise and relevant information. Do not attempt only to highlight the successes of the case report but mention the limitations and possible reasons for the limitations, as this will give you more credibility.

Limitations of a Case Report

According to Martyn (2002) and Green and Johnson (2006), there are limitations to writing case reports. The authors summarised the limitations of a case report to be difficult to control the confounding factors with each patient and thus making generalisability difficult. In addition, retrospective case reports are dependent on accurate patient documentation. If documents are not complete this introduces a source of error into the report.

Conclusion

Case reports make an essential contribution to research and if conducted in a systematic and thorough manner can be of value to clinicians and academics.

It is however, it is important to highlight the limitations of the case report that is being presented.

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OBESITY IN CHILDREN: A CASE FOR TENNESSEE

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Abstract

Obesity is a chronic condition that affects personal health, morbidity and mortality rates, psychological wellness, and health care costs. There has been a worldwide increase of obesity in children. More than half of adults in the United States are overweight and the incidence of obesity in adolescents has almost tripled in the past 30 years. Obesity has a complex and multi-factorial etiology and a significant economic impact. Obesity predisposes children to cardiovascular disease, Type 2 diabetes, depression, and numerous other conditions. Adult-onset diabetes was renamed to Type 2 diabetes to accommodate the escalating rate of diagnosis in obese children. Thus intervention strategies are indicated and the primary prevention interventions for Tennessee include standardization of data collection, breastfeeding promotion, improved physical activity infrastructure, and education / marketing programmes.

Key words: obesity, children, Tennessee