RESEARCH ARTICLE

PHYSIOTHERAPISTS' KNOWLEDGE OF THE TRANSMISSION AND PREVENTION OF COMMUNICABLE DISEASES

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ABSTRACT: *With the world-wide increase of communicable diseases, adequate knowledge by health professionals of the transmission and prevention of these diseases is essential to ensure effective protection. The aim of this study was to determine whether practising physiotherapists' knowledge of the transmission and prevention of tuberculosis, hepatitis A, hepatitis B, hepatitis C and HIV/AIDS was adequate to ensure effective protection.*

A descriptive study was conducted. One hundred and forty six practising physiotherapists in the Free State received questionnaires on which they had to indicate the relevant transmission and preventative measures for each disease. One hundred and three (70.5%) questionnaires were returned. Points were allocated for the knowledge of transmission and preventative measures. The medians with respect to transmission were: tuberculosis 83%, hepatitis A 58%, hepatitis B 67%, hepatitis C 75% and HIV/AIDS 92%. The medians with respect to preventative measures were: tuberculosis 57%, hepatitis A 58%, hepatitis B 77%, hepatitis C 67% and HIV/AIDS 71%. The knowledge of transmission was better than the knowledge of preventative measures. An increase in the knowledge of practising physiotherapists in the Free State is needed to ensure their maximal protection against communicable diseases.

KEY WORDS: TUBERCULOSIS, HEPATITIS, HIV/AIDS, KNOWLEDGE, TRANSMISSION, PREVENTION

INTRODUCTION

Physiotherapists are constantly in contact with a variety of patients and diseases, and thus run an increased risk of infection. In South Africa, 1000 people die of tuberculosis every month (Collins, 2000), 1700 are infected with HIV daily (Orlovic, 2000) and roughly 60% of adults have been infected with hepatitis B (Yach & Buthelezi, 1995).

A study by Buso et al (2000) reported that few South African doctors knew the correct diagnostic protocol for pulmonary tuberculosis. Doctors in a middle income county in China appeared to understand the transmission of hepatitis B, but confused it with hepatitis A. Doctors who had not gained the village doctor certificate appeared to have the greatest need for further education and information of hepatitis B seems to be theoretical and not practical (Clayton et al, 1993). An increase in knowledge of HIV/AIDS in physiotherapy and occupational therapy students led to a positive influence on their regard towards patients, but did not improve their willingness to work with these patients (Balogun et al, 1997). A previous study determined that the attitude of physiotherapists in Bloemfontein is positive towards treating HIV/AIDS patients although some moral questions were posed. More than half (58%) of these physiotherapists did not have an adequate working knowledge of the preventative measures for HIV transmission (Barr et al, 1994).

The aim of the study was therefore to determine whether physiotherapists practising in the Free State have adequate knowledge of the transmission and prevention of tuberculosis, hepatitis A, B and C and HIV/AIDS.

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METHODS

A descriptive study was conducted. All practising physiotherapists in the Free State were included. Addresses were obtained from the SA Physiotherapy Association (Free State), Private Practice Association, Provincial Head of Clinical Physiotherapists, telephone directories and personal enquiry. Participation was voluntary and confidentiality was ensured. The Ethics Committee of the Faculty of Health Sciences, University of the Free State (UFS) approved the study.

A questionnaire was compiled and consisted of the following segments: demographic information, general knowledge and knowledge regarding transmission and preventative measures of tuberculosis (TB), Hepatitis A-virus (HAV), hepatitis B-virus (HBV), hepatitis C-virus (HCV) and HIV/AIDS. Participants had to indicate whether a certain preventative measure was always essential, desirable, or never essential.

In Bloemfontein, questionnaires were delivered by hand and questionnaires were mailed to physiotherapists in the rest of the Free State. Stamped envelopes were included.

To keep bias and variation to a minimum the following was done:

- Questionnaires were compiled under supervision of the Department of Biostatistics after a literature review and consulting with experts on communicable diseases and on compiling questionnaires. A pilot study was also conducted in which eight non-practising lecturers (Department Physiotherapy, UFS) completed the questionnaire.
- A covering letter attached to each questionnaire, explained that discussing or retrieving additional information to answer the questionnaire would influence the results.

The correct answers for the questions were obtained from various relevant sources (Collins, 1989; Benenson, 1990; Mandell et al, 1990; WHO Fact Sheets WHO/204 and WHO/164, 2000; and WHO vaccines, 2002).

Descriptive statistics, namely frequencies and percentages for categorical data, and means and standard deviations or medians and percentiles for continuous data were determined by the Department of Biostatistics, UFS.

An information leaflet with the relevant information as well as the results of the study was sent to all participants.

Table 1: Demographic information of participants (n=103)

Male	8 (8%)
Female	95 (92%)
Mean age	30 years (range 21 - 60)
Location of practice:	
Bloemfontein	69%
Rest of Free State	31%
Type of practice:	
Full-time private	51%
Part-time private	15%
Full-time hospital	40%
Part-time hospital	16%
Academic	6%
Other (eg. School, home consultations, community)	8%

RESULTS

One hundred and three (70.5%) of the 146 questionnaires were returned. The demographic information is summarised in Table 1. The respondents were predominantly female (92%) and practising in Bloemfontein (69%), with a median of 7 years practical experience.

Transmission

Table 2 summarises the method of transmission of the relevant diseases.

Tuberculosis: All participants (103) answered the TB section, but one person marked all the options and was excluded. Six participants scored the maximum of 100% and 2 participants scored the minimum of 42%. The participants who marked the option "other" did not specify anything except one who specified "contact with air". A large percentage of participants correctly knew that TB was transmitted via sputum (84%) and nasopharyngeal secretions (78%). A smaller percentage (65%), however, marked that TB was transmitted via aerosols.

Hepatitis A: Twelve participants did not complete the HAV section and one participant marked all the options and was excluded. Two participants scored the maximum of 83% and one participant scored the minimum of 25%. Three participants marked the option "other", but did not specify anything. The main route for HAV transmission is the faecal-oral route, but HAV is also transmitted via nasopharyngeal secretion, sputum and aerosols. Few participants, however, marked these routes (Table 2).

Table 2: Method of transmission of the relevant diseases

Method of transmission	Chosen option (% participants)				
	TB (n = 102)	HAV (n = 90)	HBV (n = 95)	HCV (n = 85)	HIV / AIDS (n = 101)
Faecal - oral	26	69	55	39	45
Nasopharyngeal secretions (without blood)	78	32	31	18	20
Aerosols	65	22	17	8	6
Saliva (without blood)	65	31	37	16	16
Urine (without blood)	14	25	40	23	24
Blood	27	53	79	67	99
Needle pricks	13	45	69	46	94
Sputum (without blood)	84	38	39	21	22
Sweat	4	15	11	5	6
Tears	4	7	7	3	8
Faeces (without blood)	17	42	37	28	31
Sexual secretions	14	23	40	23	78
Other (specify)	6	3	10	5	14

Shaded area = Correct option

Hepatitis B: Seven participants did not complete the HBV section and one participant marked all the options and was excluded. Nine participants scored the maximum of 92% and one participant scored the minimum of 25%. Only 37% of the participants marked the correct options "sputum (without blood)" and 40% marked "sexual secretions". Participants were more knowledgeable about the transmission routes "blood" (79%) and "needle pricks" (69%) [only 0.0004ml blood is needed for the transmission of HBV and physiotherapists have to be aware of the high risk involved].

Hepatitis C: Sixteen participants did not complete the HCV section and 2 participants marked all the options and were excluded. Ten participants scored the maximum of 100% and 4 participants the minimum of 42%. The participants who marked "other" did not specify anything. Participants marked the correct transmission routes "blood" (67%) and "needle pricks" (46%), and many marked the incorrect options "faecal-oral" (39%) and "faeces (without blood)" (28%). A lack of HCV knowledge could account for the many transmission options marked.

HIV/AIDS: All participants answered the HIV/AIDS section. Two participants marked all the options and were excluded. Twenty-three participants scored 100%, one participant scored the minimum of 33%. Those who marked the option 'other' did not specify anything.

Preventative measures

The preventative measures for hepatitis (HAV, HBV and HCV) transmission are summarised in Table 3 and for TB and HIV/AIDS in Table 4. The correct options are highlighted.

Hepatitis A: For HAV (Table 3), 8 of the 11 preventative measures are always necessary. The percentage participants that chose the correct "Always" option ranged from 64% to 92%. Although "Desirable" was the correct option for the 3 remaining questions, most participants chose the "always" option (48%

Table 3: Preventative measures for hepatitis transmission

Preventative measure	HAV				HBV				HCV			
	Always (%)	Desirable (%)	Never (%)	n	Always (%)	Desirable (%)	Never (%)	n	Always (%)	Desirable (%)	Never (%)	n
Washing hands	92	8	0		96	4	0	100	93	7	0	95
Disinfecting hands	67	32	1	100	78	22	0	100	68	32	0	95
Wearing gloves	58	38	4	99	81	18	1	101	61	36	3	94
Wearing gloves if excretions (urine and faeces) are present	80	20	0	100	81	18	1	101	65	34	1	95
Wearing gloves if visible blood is present	80	19	1	100	93	6	1	100	88	11	1	94
Wearing gloves if saliva, sputum and nasopharyngeal secretions are present	62	36	2	98	76	22	2	100	66	31	3	94
Wearing a mask	48	36	16	100	60	32	8	100	55	39	6	95
Wearing a mask if infective material can splash	81	17	2	99	87	12	1	101				
Wearing a plastic apron									44	51	5	94
Wearing a plastic apron if excretions (urine and faeces) are present	65	32	3	99	66	31	3	101	60	37	3	94
Wearing a plastic apron if saliva, sputum and nasopharyngeal secretions are present					61	37	2	100	52	46	2	93
Wearing a plastic apron if infective material can splash	73	25	2	100	81	18	1	101	71	28	1	94
Wearing eye protection if infective material can splash					85	13	2	100				
Sterilise vectors (e.g. stethoscope) after contact with patient	64	31	5	99	70	30	0	100				
Putting terminal phase patient in a single room									45	47	9	92

Shaded area = Correct option

Table 4: Preventative measures for TB and HIV / AIDS transmission

Preventative measure	TB				HIV / AIDS			
	Always (%)	Desirable (%)	Never (%)	n	Always (%)	Desirable (%)	Never (%)	n
Washing hands	97	3	0	100	91	9	0	101
Disinfecting hands	65	34	1	102	72	25	3	101
Wearing gloves	58	40	2	100	73	26	1	99
Wearing gloves if excretions (urine and faeces) are present	76	22	2	102	75	23	2	100
Wearing gloves if visible blood is present	75	25	0	101	94	5	1	101
Wearing gloves if saliva, sputum and nasopharyngeal secretions are present	85	15	0	102	77	22	1	100
Wearing a mask	84	16	0	101				
Wearing a mask if infective material can splash					93	7	0	100
Wearing a cap with endo-tracheal suction	52	39	9	100				
Wearing a cap if infective material can splash					61	29	10	98
Wearing a plastic apron	40	54	6	101				
Wearing a plastic apron if excretions (urine and faeces) are present	49	47	4	101	67	29	4	100
Wearing a plastic apron if saliva, sputum and nasopharyngeal secretions are present	64	34	2	101	61	37	2	101
Wearing a plastic apron if infective material can splash	82	17	1	101	83	15	2	102
Wearing eye protection if infective material can splash					89	9	2	102
Sterilise vectors (e.g. stethoscope) after contact with patient	70	27	3	99	67	31	2	100
Putting terminal phase patient in a single room	57	40	3	100	42	40	18	102

Shaded area = Correct option

to 62%). Three participants marked the "other" option, but did not specify anything.

Hepatitis B: For HBV (Table 3) 11 of the 13 preventative measures is always necessary. The percentage participants that chose the correct "Always" option ranged from 61% to 96%. Although "Desirable" was the correct option for the remaining 2 questions, most participants chose the "always" option (60% and 81%). Only 17.8% and 32%, respectively, chose the correct "desirable" option with "wearing gloves" and "wearing a mask". This indicates either a more practical approach of the participants, over caution, or a constant choice of the same option. Two participants marked the "other" option, but did not specify anything.

Hepatitis C: Eight participants did not complete the section for HCV (Table 3). Seven participants gave no reason, and one participant stated that he/she had no knowledge of the disease. Five participants marked the "other" option, but did not specify anything.

Tuberculosis: For TB (Table 4), only 2% of the participants marked the correct option of "never" for the question "wearing gloves when excretions (urine and faeces) are present". No participant marked the correct option "never" for the question "wearing gloves when visible blood is present". Five participants marked the "other" option, but only 2 specified the following: "wearing a mask and glasses", and "wearing glasses is desirable".

Table 5: Participants' knowledge of transmission and prevention of communicable diseases

Disease	Transmission (% correct answers)			Prevention (% correct answers)		
	Minimum	Median	Maximum	Minimum	Median	Maximum
TB	42	83	100	21	57	71
HAV	25	58	83	8	58	92
HBV	25	67	92	15	77	100
HCV	42	75	100	0	67	92
HIV / AIDS	33	92	100	7	71	93

HIV/AIDS: For HIV/AIDS (Table 4), 12 of the 14 preventative measures always need to be taken. The percentage of participants who chose the correct "Always" option varied from 42% to 94%. Although the correct option was "desirable" for the remaining 2 preventative measures most participants chose the "Always" option. Only 26% and 31%, respectively chose the correct option of "wearing gloves" and "sterilisation of vectors (e.g. Stethoscope) after contact with patient". Two participants marked the option "other", but did not specify anything.

The minimum, median and maximum percentage of correct answers given for TB, HAV, HBV, HCV and HIV/AIDS are summarised in Table 5. For TB, HCV and HIV/AIDS the median percentage of correct answers for transmission was higher than that for prevention.

DISCUSSION

Knowledge of the method of transmission is in general better than that of preventative measures for the diseases studied (Table 5).

The median percentage for the knowledge of method of transmission for HIV/AIDS is 91.7%. The high percentage of participants that marked blood (99%) and needle pricks (94%) could be ascribed to the large amount of publicity that HIV/AIDS receives. It is, however, strange that 45% of the participants marked faecal-oral as a method of HIV/AIDS transmission.

Responses with regard to preventative measures indicate a more practical approach of the participants, over caution, or a constant choice of the same option.

Many participants in private practice may feel that they do not often come into contact with the diseases and therefore that the diseases do not pose any real threat to them. This may be a possible explanation why their knowledge of method of transmission and preventative measures is not comprehensive. It is, however, imperative that physiotherapists protect themselves as these diseases have asymptomatic periods varying from two weeks to years.

The knowledge of communicable diseases could be reinforced by publishing the results and inclusion into the physiotherapy pre-graduate curriculum.

CONCLUSION

Tuberculosis, hepatitis A, B and C and HIV/AIDS are growing problems in South Africa. Knowledge of these diseases is needed to ensure optimal protection for the physiotherapist.

The study shows that the physiotherapist's knowledge of transmission and preventative measures of these diseases is relatively good, but not adequate to ensure their optimal protection.

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