

Appendix 1: Questionnaire

Perceptions and preparedness of South African final year pharmacy students regarding the practical application of pharmacoeconomics

Consent statement for participation in the study

Thank you for taking time to participate in this study. The questionnaire itself consists of three pages and will take no longer than 15-20 minutes to complete. Please read through this page carefully, before proceeding with the study questions. Do not hesitate to contact the researcher to clarify any uncertainties before completing the survey. Please also take time to rethink your participation in the study.

The aim of the study is to determine the perceptions and preparedness of South African final year Bachelor of Pharmacy students regarding the application of pharmacoeconomics in practice. The objectives of the study are as follows:

- To assess the interpretation of basic pharmacoeconomic concepts and their application in medicines management in South Africa, by final year pharmacy students.
- To ascertain the preparedness of South African final year pharmacy students to apply pharmacoeconomics in practice.
- To determine perceptions of pharmacy students regarding the relevance of pharmacoeconomics in medicines management.
- To determine the need among final year pharmacy students for additional education in pharmacoeconomics.

By completing this questionnaire, you acknowledge that you have heard/read and understand the above aim and objectives of the study, and that they are clear to you. Information obtained in this study may be used in scientific publications nationally and internationally and will subsequently be available electronically. Results of this research will be used for scientific purposes. By completing the questionnaire, you consent to this since your name is not provided anywhere in this survey and is therefore completed anonymously. Participation in this project is completely voluntary, and you were not pressurised, in any way, to participate.

This project has been granted ethical approval by the Sefako Makgatho Science University Research Ethics Committee (SMUREC). The SMUREC Ethics Reference Number is SMUREC/P/97/2018: PG.

Demographic information

Please tick the appropriate box to the following:

										x	
Gender:	<input type="checkbox"/>	Male	<input type="checkbox"/>	Female	<input type="checkbox"/>	Other, please specify:					

Race:	<input type="checkbox"/>	African	<input type="checkbox"/>	Asian	<input type="checkbox"/>	Coloured	<input type="checkbox"/>	Indian	<input type="checkbox"/>	White
	<input type="checkbox"/>	Other, please specify:								

Age:	<input type="checkbox"/>	Years	<input type="checkbox"/>	Months	or DOB	<input type="checkbox"/>	Y	<input type="checkbox"/>	Y	<input type="checkbox"/>	Y	<input type="checkbox"/>	-	<input type="checkbox"/>	M	<input type="checkbox"/>	M	<input type="checkbox"/>	-	<input type="checkbox"/>	D	<input type="checkbox"/>	D
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Please indicate at which academic institution you are currently enrolled			
Nelson Mandela University (NMU)	<input type="checkbox"/>	University of KwaZulu-Natal (UKZN)	<input type="checkbox"/>
North-West University (NWU)	<input type="checkbox"/>	University of Limpopo (UL)	<input type="checkbox"/>
Rhodes University (RU)	<input type="checkbox"/>	University of the Western Cape (UWC)	<input type="checkbox"/>
Sefako Makgatho Health Sciences University (SMU)	<input type="checkbox"/>	University of the Witwatersrand (WITS)	<input type="checkbox"/>
Tshwane University of Technology (TUT)	<input type="checkbox"/>		<input type="checkbox"/>
Do you hold any other degree(s)?			
a. No	<input type="checkbox"/>		
b. Yes, please specify:	<input type="text"/>		
Please indicate in which sector you intend on completing your internship			
a. Academic institution	<input type="checkbox"/>	d. Public institutional pharmacy	<input type="checkbox"/>
b. Community pharmacy	<input type="checkbox"/>	e. Manufacturing pharmacy	<input type="checkbox"/>
c. Private institutional pharmacy	<input type="checkbox"/>	f. Don't know	<input type="checkbox"/>

Pharmacoeconomics education during BPharm degree programme

Please answer the following question:

1.	What is the name of the subject/module/course under which pharmacoeconomics was offered during your BPharm degree programme?
	<input type="text"/>

Please choose one answer to each of the following questions:

2.	At which level of the BPharm programme was pharmacoeconomics offered?								
	<table border="1"> <tr> <td>a. 3rd Year</td> <td><input type="checkbox"/></td> <td>c. Both 3rd and 4th year</td> <td><input type="checkbox"/></td> </tr> <tr> <td>b. 4th Year</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> </table>	a. 3 rd Year	<input type="checkbox"/>	c. Both 3 rd and 4 th year	<input type="checkbox"/>	b. 4 th Year	<input type="checkbox"/>		
a. 3 rd Year	<input type="checkbox"/>	c. Both 3 rd and 4 th year	<input type="checkbox"/>						
b. 4 th Year	<input type="checkbox"/>								
3.	Was pharmacoeconomics offered as a mandatory or elective subject/module/course during your BPharm degree programme?								
	<table border="1"> <tr> <td>a. Mandatory subject/module/course</td> <td><input type="checkbox"/></td> <td>c. Don't know</td> <td><input type="checkbox"/></td> </tr> <tr> <td>b. Elective subject/module/course</td> <td><input type="checkbox"/></td> <td>d. Other, please specify:</td> <td><input type="text"/></td> </tr> </table>	a. Mandatory subject/module/course	<input type="checkbox"/>	c. Don't know	<input type="checkbox"/>	b. Elective subject/module/course	<input type="checkbox"/>	d. Other, please specify:	<input type="text"/>
a. Mandatory subject/module/course	<input type="checkbox"/>	c. Don't know	<input type="checkbox"/>						
b. Elective subject/module/course	<input type="checkbox"/>	d. Other, please specify:	<input type="text"/>						
4.	Was your knowledge on pharmacoeconomics tested during your BPharm degree programme?								
	<table border="1"> <tr> <td>a. No</td> <td><input type="checkbox"/></td> </tr> <tr> <td>b. Yes, please specify how it was tested:</td> <td><input type="text"/></td> </tr> </table>	a. No	<input type="checkbox"/>	b. Yes, please specify how it was tested:	<input type="text"/>				
a. No	<input type="checkbox"/>								
b. Yes, please specify how it was tested:	<input type="text"/>								

Please answer the following question:

5.	How was pharmacoeconomics taught during your BPharm degree programme and what is the estimated amount of time (clock hours) spent on teaching? (may choose more than one option)																									
	<table border="1"> <tr> <td>a. Lectures</td> <td>Standard lecture duration (minutes)</td> <td><input type="text"/></td> <td>Total number of lectures spent on teaching pharmacoeconomics</td> <td><input type="text"/></td> </tr> <tr> <td>b. Practical work</td> <td>Standard duration of practical work (minutes)</td> <td><input type="text"/></td> <td>Total number of practical work sessions spent on pharmacoeconomics</td> <td><input type="text"/></td> </tr> <tr> <td>c. Tutorials</td> <td>Standard tutorial duration (minutes)</td> <td><input type="text"/></td> <td>Total number of tutorials spent on teaching pharmacoeconomics</td> <td><input type="text"/></td> </tr> <tr> <td>d. Workshops</td> <td>Standard lecture duration (minutes)</td> <td><input type="text"/></td> <td>Total number of lectures spent on teaching pharmacoeconomics</td> <td><input type="text"/></td> </tr> <tr> <td colspan="5">e. Other, please specify: <input type="text"/></td> </tr> </table>	a. Lectures	Standard lecture duration (minutes)	<input type="text"/>	Total number of lectures spent on teaching pharmacoeconomics	<input type="text"/>	b. Practical work	Standard duration of practical work (minutes)	<input type="text"/>	Total number of practical work sessions spent on pharmacoeconomics	<input type="text"/>	c. Tutorials	Standard tutorial duration (minutes)	<input type="text"/>	Total number of tutorials spent on teaching pharmacoeconomics	<input type="text"/>	d. Workshops	Standard lecture duration (minutes)	<input type="text"/>	Total number of lectures spent on teaching pharmacoeconomics	<input type="text"/>	e. Other, please specify: <input type="text"/>				
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e. Other, please specify: <input type="text"/>																										

Pharmacoeconomic concepts

Please choose one answer to each of the following statements on the **scope of pharmacoeconomics**:

6.	Examines and calculates the costs of medicines and treatments <u>only</u>	True	False	Don't know
	Compares different pharmaceutical interventions to each other	True	False	Don't know
	Evaluates and measures the costs <u>and</u> benefits of drug therapy	True	False	Don't know
	Involves a combination of health economics and clinical outcomes	True	False	Don't know
	Measures the impact of the costs of medicines on medicine budgets	True	False	Don't know

Please indicate your level of understanding of the following pharmacoeconomic concepts by ticking the most appropriate answer:

		I have no understanding	I have no understanding but would like to	I have some understanding	I understand this term and can explain it to others	N/A
7.	Cost-minimisation analysis (CMA)					
	Cost-benefit analysis (CBA)					
	Cost-effectiveness analysis (CEA)					
	Cost-utility analysis (CUA)					
	Incremental cost-effectiveness ratio (ICER)					
	Sensitivity analysis					
	Opportunity costs					
	Discounting					
	Quality adjusted life year (QALY)					
	Disability adjusted life year (DALY)					

The input (costs) for the following pharmacoeconomic analyses are all measured in **monetary units (Rands)**. Please match an applicable outcome measurement unit for each analysis, by choosing the appropriate number:

8.	Method of pharmacoeconomic evaluation	No.	No.	How outcomes (health benefits) are measured
	Cost-minimisation analysis (CMA)		1	Health benefits across therapies are valued in similar units, depending on individual preference
	Cost-benefit analysis (CBA)		2	Health benefits assumed to be equivalent and can take any form (e.g. number of life years saved, reduction in cholesterol levels)
	Cost-effectiveness analysis (CEA)		3	Measured in similar or different units and always valued in monetary units (e.g. amount willing to pay to prevent injury)
	Cost-utility analysis (CUA)		4	Health benefits across therapies are measured in similar natural health units

Preparedness for application of pharmacoeconomics in practice

Please indicate your level of agreement with the following statements by ticking the most appropriate answer:

9.	I received enough exposure to pharmacoeconomics during my BPharm degree programme to understand the basic pharmacoeconomic principles and concepts	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
10.	I am adequately prepared to apply fundamental pharmacoeconomic concepts in practice to conduct a pharmacoeconomic analysis	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
11.	I can interpret the results of a pharmacoeconomic analysis/study and make a decision based on my interpretation	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
12.	I know where to find more information on pharmacoeconomic concepts	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
13.	I find pharmacoeconomics interesting and enjoyable	Strongly disagree	Disagree	No opinion	Agree	Strongly agree

Please indicate how competent you consider yourself to perform the following pharmacoeconomic analyses, by ticking the most appropriate answer:

14.	Cost-minimisation analysis (CMA)	Very incompetent	Incompetent	No opinion	Competent	Very competent
	Cost-benefit analysis (CBA)	Very incompetent	Incompetent	No opinion	Competent	Very competent
	Cost-effectiveness analysis (CEA)	Very incompetent	Incompetent	No opinion	Competent	Very competent
	Cost-utility analysis (CUA)	Very incompetent	Incompetent	No opinion	Competent	Very competent

Please indicate how often you expect to perform the following pharmacoeconomic analyses in practice:

15.	Cost-minimisation analysis (CMA)	Never	Rarely	Often
	Cost-benefit analysis (CBA)	Never	Rarely	Often
	Cost-effectiveness analysis (CEA)	Never	Rarely	Often
	Cost-utility analysis (CUA)	Never	Rarely	Often

Relevance of pharmacoeconomics in practice

Please answer the following question:

16.	Which professionals do you think, should perform pharmacoeconomic analyses for use in practice? (may choose more than one option)			
	a. Health economists		f. Medical practitioners	
	b. Economists		g. Epidemiologists	
	c. Accountants		h. Demographers	
	d. Pharmacists		i. People with a mathematical background	
	e. Nursing practitioners		j. Mathematical modellers	

Please indicate your level of agreement with the following statements on application of pharmacoeconomics in South Africa by ticking the most appropriate answer:

17.	Ensures optimal use of medicine budgets across the South African public health sector	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
18.	Should form an integral part of the South African National Health Insurance system	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
19.	Will improve access to medicines	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
20.	An important skill which South African pharmacists should possess	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
21.	Improves medicine-related decisions in the South African healthcare system	Strongly disagree	Disagree	No opinion	Agree	Strongly agree

Please indicate your level of agreement about the instances where pharmacoeconomics is used in South Africa:

22.	Planning of production and sales of medicines	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
23.	Pricing of medicines	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
24.	Clinical decision-making at an individual patient level, in case of special motivation for medicine not available on the Essential Medicines List (EML), formulary or Standard Treatment Guidelines (STGs)	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
25.	Registration of new medicines with the South African Health Products Regulatory Authority (SAHPRA)	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
26.	Inclusion of medicines in medicine formularies (e.g. EML, medical aid formularies, STGs)	Strongly disagree	Disagree	No opinion	Agree	Strongly agree

Please choose one answer to the following question:

27.	In your opinion, to which South African health sector is application of pharmacoeconomics relevant?			
	a. Private sector only (e.g. Medical aid formularies)		c. Both private and public sector	
	b. Public sector only (e.g. Essential Medicines List, Standard Treatment Guidelines)		d. Don't know	

Future education in pharmacoeconomics

Please indicate your level of agreement with the following statements by ticking the most appropriate answer:

28.	Future education in pharmacoeconomics is essential for my role as pharmacist	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
29.	I would have liked to receive more pharmacoeconomics training at an undergraduate level	Strongly disagree	Disagree	No opinion	Agree	Strongly agree

Please choose one answer to the following questions:

30.	Would you like to acquire additional knowledge on pharmacoeconomics in future?			
	a. Yes, please proceed to Question 31			
	b. No, I would not like to acquire additional knowledge on pharmacoeconomics			

31.	How would you like to acquire additional knowledge regarding pharmacoeconomics?			
	a. Continuous professional development (CPD) programme		c. Postgraduate studies	
	b. Self-study			

Provide any additional comments or thoughts on pharmacoeconomics and its application in the practice of pharmacy				

Thank you for your time and participation!