Note: This is Online Appendix 1 of Mabuza LH, Moshabela M, Understanding of 'generalist medical practice' in South African medical schools Afr J Prm Health Care Fam Med. 2024;16(1), a4324. https://doi.org/10.4102/phcfm. v16i1.4324

Online Appendix 1
Students' clinical preceptors in the four medical schools

	HODs	Discipline	Code
	Institution A		
1.		Family Medicine	AWST1
2.		Internal Medicine	AWST2
3.		Obstetrics & Gynaecology	AWST3
4.		General Surgery	AWST4
5.		Paediatrics & Child Health	AWST5
6.		Dermatology	AWST6
	Institution B		
7.		Family Medicine	BKZT1
8.		Psychiatry	BKZT2
9.		Internal Medicine	BKZT3
10.		Obstetrics & Gynaecology	BKZT4
11.		General Surgery	BKZT5
12.		Paediatrics & Child Health	BKZT6
13.		Orthopaedics	BKZT7
	Institution C		
14.		Family Medicine	CSMT1
15.		Psychiatry	CSMT2
16.		Internal Medicine	CSMT3
17.		Obstetrics & Gynaecology	CSMT4
18.		General Surgery	CSMT5
19.		Paediatrics & Child Health	CSMT6
20.		Orthopaedics	CSMT7
	Institution D		
21.		Family Medicine	DWTT1
22.		Psychiatry	DWTT2
23.		Internal Medicine	DWTT3
24.		Obstetrics & Gynaecology	DWTT4
25.		General Surgery	DWTT5
26.		Paediatrics & Child Health	DWTT6
27.		Orthopaedics	DWTT7

Note: This is Online Appendix 2 of Mabuza LH, Moshabela M, Understanding of 'generalist medical practice' in South African medical schools Afr J Prm Health Care Fam Med. 2024;16(1), a4324. https://doi.org/10.4102/phcfm. v16i1.4324

Online Appendix 2

Table 2: Medical students from the four medical schools

MBChB 4				MBChB 5				MBChB 6			
Student Number	Code	Sex	Age (years)	Student Number	Code	Sex	Age (years)	Student Number	Code	Sex	Age (years)
1.	WSS4.1	F	20	36.	WSS5.1	M	24	69.	WSS6.1	F	23
2.	WSS4.2	M	21	37.	WSS5.2	F	23	70.	WSS6.2	F	28
3.	WSS4.3	M	24	38.	WSS5.3	F	23	71.	WSS6.3	M	24
4.	WSS4.4	F	22	39.	WSS5.4	F	24	72.	WSS6.4	M	26
5.	WSS4.5	F	20	40.	WSS5.5	M	22	73.	WSS6.5	M	25
6.	WSS4.6	F	22	41.	WSS5.6	M	27	74.	WSS6.6	F	24
7.	WSS4.7	M	25	42.	WSS5.7	F	24	75.	WSS6.7	F	26
8.	WSS4.8	M	23	43.	WSS5.8	M	23	76.	WSS6.8	F	27
9.	WSS4.9	F	23	44.	WSSM5.1	M	23	77.	WSSM6.1	M	29
10.	WSSM4.1	M	25	45.	WSSM5.2	F	22	78.	KZS6.1	M	23
11.	WSSM4.2	F	27	46.	KZS5.1	M	23	79.	KZS6.2	M	24
12.	WSSM4.3	M	33	47.	KZS5.2	F	24	80.	KZS6.3	F	26
13.	KZS4.1	M	21	48.	KZS5.3	F	23	81.	KZS6.4	M	24
14.	KZS4.2	F	21	49.	KZS5.4	F	23	82.	KZS6.5	F	25
15.	KZS4.3	M	22	50.	KZS5.5	F	22	83.	KZS6.6	M	24
16.	KZS4.4	M	21	51.	KZS5.6	M	24	84.	KZS6.7	F	24
17.	KZS4.5	F	26	52.	KZS5.7	F	25	85.	KZS6.8	M	25
18.	KZS4.6	M	21	53.	KZSM5.1	F	23	86.	KZS6.9	F	24
19.	KZS4.7	M	22	54.	KZSM5.2	M	22	87.	KZS6.10	M	26
20.	KZS4.8	F	23	55.	SMS5.1	M	36	88.	KZSM6.1	F	23
21.	KZSM4.1	M	23	56.	SMS5.2	M	30	89.	KZSM6.2	F	24
22.	KZSM4.2	M	21	57.	SMS5.3	M	41	90.	SMS6.1	M	24
23.	SMS4.1	F	22	58.	SMS5.4	F	23	91.	SMS6.2	M	25
24.	SMS4.2	F	21	59.	SMS5.5	M	29	92.	SMS6.3	M	28
25.	SMS4.3	M	22	60.	SMSM5.1	F	21	93.	SMS6.4	M	25
26.	SMS4.4	M	21	61.	SMSM5.2	M	23	94.	SMS6.5	F	33
27.	SMS4.5	M	20	62.	WTS5.1	M	22	95.	SMSM6.1	M	24
28.	SMSM4.1	M	21	63.	WTS5.2	M	22	96.	SMSM6.2	M	29
29.	SMSM4.2	M	21	64.	WTS5.3	F	23	97.	SMSM6.3	M	23
30.	WTS4.1	M	23	65.	WTS5.4	M	23	98.	WTS6.1	M	23
31.	WTS4.2	M	25	66.	WTS5.5	M	23	99.	WTS6.2	M	22
32.	WTS4.3	M	24	67.	WTSM5.1	M	21	100.	WTS6.3	M	25
33.	WTS4.4	F	21	68.	WTSM5.2	M	22	101.	WTS6.4	M	23
34.	WTS4.5	M	22					102.	WTSM6.1	F	23
35.	WTSM4.1	F	20								

Note: This is Online Appendix 3 of Mabuza LH, Moshabela M, Understanding of 'generalist medical practice' in South African medical schools Afr J Prm Health Care Fam Med. 2024;16(1), a4324. https://doi.org/10.4102/phcfm. v16i1.4324

Online Appendix 3

Study title

What do medical students and their clinical preceptors understand by "generalist medical practice" in South African medical schools? A qualitative study Interview guide for students

Opening statement (focus group discussions):

As undergraduate medical students in this institution, what would you say is your understanding of generalist medical practice?

Prompts:

1. What is your understanding of generalist medical practice, regarding:
    - the point of first patient contact?
    - the undifferentiated patient?
    - continuity of patient care?
    - coordination of patient care?
    - holistic patient care?
    - health promotion and disease prevention
2. Are there any other comments that you would like to make regarding your understanding of generalist medical practice?

A. Interview guide for students' clinical preceptors

Opening statement (one-on-one interviews):

As a trainer of undergraduate medical students, what is your understanding of generalist medical practice?

Prompts:

1. Please tell me about your understanding of generalist medical practice, regarding:
    - the point of first patient contact?
    - the undifferentiated patient?
    - continuity of patient care?
    - coordination of patient care?
    - holistic patient care?
    - health promotion and disease prevention
2. Do you have any other comments that you would like to make regarding your understanding of generalist medical practice?

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Online Appendix 4

Study findings

1. Students' understanding of general medical practice

Students explained their understanding of generalist medical practice in terms of the roles of a generalist medical practitioner as they experienced it. To this end, their understanding was described in the following terms: (1) the first point of patient contact with the healthcare system, (2) requires knowledge of a wide range of conditions, (3) deals with undifferentiated patients, (4) involves stabilizing those with emergency conditions who need referral, (5) provides continuity of care, (6) ensures coordination of patient care, (7) delivers holistic patient care and (8) advocates for health promotion and disease prevention. Furthermore, students understood a generalist medical practitioner as (9) in possession of basic knowledge of medicine (10) and useful in primary health care.

Table 2: Themes: students and trainers' understanding of generalist medical practice

Students	Trainers
1. The point of first patient contact	1. The point of first patient contact
2. A wide range of conditions	2. A broad base of common diseases
2.1. General conditions	
2.2. Common conditions	
2.3. Minor conditions	
3. The undifferentiated patient	3. The Undifferentiated patient
4. Stabilizes emergencies then refers	4. Stabilizes emergencies then refers
5. Continuity of care	5. Continuity of care
6. Coordination of care	6. Coordination of care
6.1. Ensuring patient advocacy	
7. Holistic patient care	7. Holistic patient care
8. Health promotion and disease prevention	8. Health promotion and disease prevention
9. Basic knowledge of medicine	9. Basic knowledge of medicine (not turning you into specialists)
10. Operates at primary health care	10. Operates at primary heath care

1.1. The point of first contact

Students asserted that generalist practice was the first point of patient contact with the health care system: *Generalist practice forms part of the first point of care which a patient would refer to when they're having a problem.* (KZNS4.1, MBChB 4, male student, 21 years); and: *Uhm, my view of generalist practice is basically your first port of entry of the healthcare system … deals with the wide variety of problems … filters what is serious from the less serious. Those things that can be treated easily, I think that's my view of generalist practice.* (WTS6.3, MBBCh 6, male student, 25 years).

1.2. A wide range of conditions

As the first point of patient contact, s/he was dealing with a wide range of medical conditions which were described as general, common and minor.

1.2.1. General conditions

General conditions were explained as *anything that comes from the community …, any presentation from … any patient who comes in fresh from outside, even if they have their own chronic conditions.* (KZS5.3, MBChB 5, female student, 23 years). This called upon the generalist practitioner to possess an "all-disciplines" competency: *So, it's someone who possesses competence in all these fields [of Medicine] and is not just focused on a particular specialty. It's someone who would be able to demonstrate a level of competence with whatever case that may come through his door.* (KZS6.3, MBChB 6, female student, 26 years). This situation was thought to reflect the undergraduate medical training in South Africa: *in our setting in South Africa, doctors have been trained to fit anywhere within [the] specialties of medicine. For example, when you complete your internship, you can choose whether you want to be, maybe work in a gynae [Gynaecology] or in orthopaedics, or anywhere.* (SMS5.4, MBChB 5, female student, 23 years).

1.2.2. Common conditions

The wide range of conditions also entailed common conditions: *My understanding … is, a generalist practitioner is basically a doctor who can function in any discipline and manage the common conditions that arise.* (KZS5.5, MBChB 5, male student, 24 years). There were various explanations on what qualifies a "common condition," such as those indicated in students' guidelines:*... there are guidelines which are there, and they would tell you that this is diabetes, like in South Africa, this is how prevalent, let's say diabetes is, this is how prevalent hypertension is.* (WTS5.3, MBBCh 5, male student, 23 years) and also those conditions that were seen as prevalent in various communities, as determined by studies that had been conducted in those communities: *So, we would learn the conditions that are common in these communities.* (WTS5.3, MBBCh 5, male student, 23 years).

1.2.3. Minor conditions

The wide range of conditions were further described as comprising "minor conditions," which were understood as those that had low mortality and did not progress rapidly to kill a patient: *by a minor basic problem [it means] it doesn't lead to mortality in a fast rate per se. So, common cold has been well researched, and it's been treated with success, it's common and it doesn't cause mortality in a fast rate. So, that, kind of, gives it the basis of 'minor problem.'* (KZS4.5, MBChB 4, female student, 26 years). Students stated that, since generalist practitioners' knowledge and skills were limited, they could only deal with minor uncomplicated conditions: *They [generalist practitioners] could be limited in skills, knowledge and experience with very complicated conditions that would usually be referred onward to the specialists* (SMS6.1, MBChB 6, male student, 24 years). This limitation was viewed as potentially dangerous to a patient: *because sometimes generalists tend to ignore or mismanage certain conditions because they sort of lack the basic background.* (WSS5.4, MBChB 5, female student, 24 years). Students provided what they thought was the reason for the limitation: *I think there are minor conditions that you [as a generalist practitioner] can manage with the resources that you have. But those that need further assessment, … need to be referred further.* (WTS5.3, female student, 23 years)

1.3. The undifferentiated patient

At that first point of patient contact with the health care system, generalist practitioners deal with patients that have not been differentiated in terms of diagnosis: *My understanding of a general[ist] practitioner is that it's a medical officer that sees undifferentiated patients like, whether surgical, medical or gynae [gynaecological] and then he, if need, can differentiate and refer them to specific specialties but then with minor ailments they manage, but with major, they refer to hospitals.* (KZS4.3, MBChB 4, male student, 22 years).

1.4. Stabilizes emergencies then refers

Faced with emergencies, generalist practitioners were understood as providers who stabilized those patients, before referring them to higher levels of care: *I think they should also be able to manage emergencies. Like, if a patient comes and maybe they have bled a lot and they have anaemia and they're unconscious, they should be able to manage that patient until they're stable enough to be referred.* (KZS4.7, MBChB 4, male student, 22 years); *I think the generalist should be able to say, 'how much of a threat to the person's life is that condition,' and then look at … the resources that are available … the equipment … sometimes management might mean, stabilize the patient for referral.* (KZS4.8, MBChB 4, female student, 23 years).

1.5. Continuity of care

Students understood continuity of care to refer to forming a relationship with your patient as a medical practitioner: *So, it's about firstly I think forming a relationship with your patient, being able to have a relationship with your patient, and also monitoring their conditions, being able to see when it gets worse, that's what I think.* (WTSM5.1, MBBCh 5, male student, 22 years), and also about patient follow-up to check on the well-being of their patients: *But it's all about following up, seeing your patients. Some doctors I think do have phones to actually check up on their patients, they also go to their patient's house,* (WTSM5.2, MBBCh 5, male student, 22 years)

1.6. Coordination of care

Coordination of care was understood as referring to multidisciplinary approach to patient care, which is facilitated by a generalist practitioner through mobilization of the team members: *So, I think a coordinated approach, means a multi-disciplinary approach, … it means that this generalist practitioner is able to function well within the medical team in order to achieve better patient outcomes and to sustain the management of that patient. So, basically it means that this generalist practitioner is able to work together [with] and mobilize all other members of the medical team in order to ensure that the best outcome is actually achieved for that patient.* (SMSM5.1, MBChB 5, female medical, 22 years old). The role of the generalist practitioner in referring a patient to appropriate professionals and oversee that process, was also mentioned: *Because generalists are the ones who are first contact of the patient, they are the ones who refer, they are the ones who know, who to do follow ups on. They are like administrators. Engines of an organization.* (SMS4.1, MBChB 4, female student, 22 years).

1.6.1. Ensuring patient advocacy

As the generalist coordinates patient care, through making a decision on who should further take-over managing a particular patient, students understood the role of a generalist practitioner as being to ensure patient advocacy by "fighting" for the patients' rights: *So, your role as a generalist in knowing what's best for the patient, at times, when referring the patient, to fight for the patient because in most cases…, you call the tertiary hospital being X to refer the patient,… and then the doctors there, … just push it off. So, if you just let it go like that, then your patient will end up dying. So, you have to advocate for the patient and make the doctor who is at the tertiary hospital understand.* (WSS6.3, MBChB 6, male student, 24 years).

1.7. Holistic patient care

Students indicated that patient-centeredness led to holistic patient care which they also referred to as health care beyond disease symptoms: *So, he [generalist practitioner] approaches every sphere. So, you can see it as cultural, social, not only the disease or symptoms but everything.* (KZS6.6, MBChB 6, male student, 26 years). Holistic patient care was also referred to as holistic care: *When we look at primary health care, I also think of it being where we manage patients more holistically, …"* (KZS4.2, MBChB 4, female students, 21 years). It was also emphasized in specialist disciplines: *If it's in paediatrics, it's not just that the child has now got appendicitis, if the child is malnourished as well, you have to deal with all of that. If you need to see a dietitian, if you need to educate the parents, if you need to help with the grant because there are problems financially. You … have to deal with the whole patient.* (WTS6.1, MBBCh 6, male student, 23 years). The holistic patient care enabled the generalist medical practitioner to take into consideration the biopsychosocial aspects of the patient: *Oh, ok so … when we treat a patient … we shouldn't just treat the biological aspect only, but also we must take into account the social aspects, how the person lives from home, how they are uhm... basically all the social aspects and then also you must look at the psychosocial ones…* (WTS4.1, MBBCh 4, male student, 23 years).

1.8. Health promotion and disease prevention

Students understood health promotion and disease prevention as another role of a generalist practitioner, whereby s/he educates the communities on health matters: *when you go into the community, you might be expected to do some health promotion. Like, we're expected to go to a school and talk to the children at the school about different*

conditions, whether it's depression, whether it's teenage pregnancy, to educate different members. (WTS6.2, MBBCh 6, male student, 23 years); *I think they are important because their main role is not only treating but is also to encourage the public about preventative measures* (SMSM4.1, MBChB 4, male student, 21 years).

1.9. Basic knowledge of medicine

Students understood a generalist medical practitioner as the practitioner with basic knowledge of medicine: *So, for me what I understand is just someone who has the ability to just be able to have a basic understanding at least in as many different conditions as possible. So, it's just like, establish a sort of baseline for every condition out there at least, or every condition within your community at least,…* (WTSM6.1, MBBCh 6, female student, 23 years). The students elaborated on their understanding of basic knowledge as: *So, for example when you rotate in orthopedics, you get the basic knowledge of how to manage basic orthopaedic cases.* (WSSM6.1, MBChB 6, 29 years). With basic knowledge of medicine, the generalist practitioners were further explained as "not specialised" in any particular medical field which was a limitation in their knowledge and skill: *Yes, my understanding is that they don't have any specific specialty, uhm… they are not trained the way that leads them towards obstetrics or surgery or gynaecology or internal medicine so, they're very limited in a way that they can treat or advise.* (WSS6.6, MBChB 6, female student, 24 years).

1.10. Operates at primary health care

Generalist practice was further understood as operational at primary health care settings: *And also, a general practitioner deals with everything but at primary [health] level. So, anyone can come to you and you have to treat them.* (WTS4.1, MBBCh 4, male student, 23 years). By primary care levels, students were referring to community levels: *when you speak about a general practitioner, essentially you see a doctor that is able to serve the community, which they are based in.* (WTS6.4, MBBCh 6, male student, 23 years).

2. Trainers' understanding of "generalist medical practice"

Student trainers also demonstrated their understanding of generalist medical practice by describing its characteristics and the role played by a generalist medical practitioner, which were: (1) the first point of patient contact, (2) management of a broad base of common conditions, (3) dealing with an undifferentiated patient, (4) coordination of care, (5) continuity of patient care, (6) holistic patient care, and (7) health promotion and disease prevention.

2.1. First point of patient contact

Trainers regarded generalist medical practice as the first point of patient contact with the health care system: *They're important as they are the first entry of any patient going into the health system.* (CSMT2, clinical preceptor, Psychiatry), and …*we make sure they know, specifically, on how to approach - they must first know how to identify the conditions and make sure they're able to investigate and manage … they are the ones in first contact with the patient.* (CSMT4, clinical preceptor, Obstetrics and Gynaecology).

2.2. A broad base of common conditions

Student trainers understood generalist medical practice to be characterized by a broad-base of common medical conditions manageable at a generalist level: *[A] generalist should be somebody who will be able to cope with the most common conditions present at whatever level of care. But, as I said, then you'd put a rider on and say, as a generalist you also need…, to recognise what is not of your level and refer it in time, properly.* (CSMT6, clinical preceptor, Paediatrics); and *it's not [that] we are expecting them to know, you know, the canaries, it'll be about assessing malnutrition, a child with HIV, a child with pneumonia, a child with diarrhoea, a child with common conditions, you know,* (BKZT6, clinical preceptor, Paediatrics); and *for each discipline, we make sure that the setting top and the common conditions are covered and what scales we'll be teaching the students.* (AWST5, clinical preceptor, Paediatrics).

2.3. The undifferentiated patient

The trainers described an undifferentiated patient in term of patients who have not yet been given a diagnosis. The 'undifferentiatedness' was one of the characteristics of patients at generalist level: *So when they are there [at generalist practice level] they are exposed to patients who are not yet diagnosed with any diseases, that is undifferentiated patients,* (CSMT1, clinical preceptor, Family Physician); and *they are encouraged to see that patient before anyone actually makes a plan on what needs to happen at that level, so that they see how the patient who comes [with] chronic cough comes to be called a pneumonia.* (DWTT6, clinical preceptor, Paediatrics).

2.4. Stabilizes emergencies and refers

Student preceptors were of the understanding that a generalist practitioner should be equipped with the skills of recognizing treatable conditions at his/her level, stabilize emergencies and refer them to appropriate specialties: *So, I think what this requires is … we need to define the competence of a primary healthcare practitioner, if it is a Colle's fracture, then you say, "You can do a Colle's fracture, but this intra-articular disc fracture in a young person, is not a Colle's fracture, this needs to go to the orthopod."* (BKZT7, clinical preceptor, Orthopaedics).

2.5. Continuity of care

This was understood by trainers as a follow-up plan in patient care: *So, diarrhoea is a condition that I expect you to know everything about, a condition that I will expect you to do investigations, I will expect you to manage in the emergencies – fully, and I will also expect you to actually have a follow-up plan of chronic management if any, at that level.* (DWTT6, clinical preceptor, Paediatrics); the follow-up was at all levels: *interacting with patients and relatives at the community level, referring those that need to be referred to a hospital and when they are at the hospital, they meet those patients again.* (AWST1, clinical preceptor, Family Medicine); and: *I do say to them [medical students], 'if you're looking after a patient and they go to the operating theatre, go with the patient so that you get to assist.'* (DWTT5, clinical preceptor, General Surgery).

2.6. Coordination of care

This was described in term of team leadership, whereby the generalist makes proper decisions on which clinician should be involved in the best interest of the patient: *Well, in my view it's the doctor that should lead the team to offer coordinated health care services. The generalist doctor … [to] offer team-based care and leadership.* (DWTT1, clinical preceptor, Family Medicine); ensuring teamwork: *So that's bringing in the teamwork, it comes up in their training but there are certain conditions even when you're just a dermatologist you need to involve the other specialties.* (AWST6, clinical preceptor, Dermatology).

2.7. Holistic patient care

A psychiatrist described holistic patient care as addressing the bio-psycho-socio-spiritual aspects of the patient: *I mean if you look at the psychiatric diagnosis according to DSM 5,… we train these students to do a dynamic formulation of the patient, looking at predisposing factors, … perpetuating factors, prognostic factors and then in their management strategy, particularly in regard to a bio-psycho-socio-spiritual context, how they would manage this patient.* (DWTT2, clinical preceptor, Psychiatry). It was also explained as putting the patient in the centre: *… the generalism is really putting the person in the centre, a holistic and ecological worldview, and it looks at relationships and connections, a lot more than categories.* (BKZT1, clinical preceptor, Family Medicine).

2.8. Health promotion and disease prevention

In relation to student training in generalist medical practice, the student preceptors understood part of their mandate as being to train students on health promotion and disease prevention: *you asked me about prevention of disease, but vaccination, early screening,… if there's an index case of TB then all the family members are screened*, (DWTT3,

clinical preceptor, Internal Medicine); and: *I would talk about pneumonia,… how you prevent pneumonia, … the vaccines and the role of immunization and prevention of that condition.* (DWTT6, clinical preceptor, Paediatrics); and: *The next level will be secondary prevention… if this individual already has the diabetes, now they come because their sugar is poorly controlled, so some level of secondary prevention happens there, …that the kidney failure does not develop, the heart failure does not develop, the strokes do not develop.* (CSMT3, clinical preceptor, Internal Medicine).

2.9. Basic knowledge of medical practice

Specialist trainers admitted that their aim in the training of the undergraduate medical students was not to turn them into 'mini-specialists', but to give them basic medical education, taking into consideration that they were trainees who would exit their training with a generalist overview of medicine: *What I thought about is that, it works better if the specialties train the student to become generalists, if they understand the mandate to train a generalist and not a specialist.* (BKZT7, clinical preceptor, Orthopeadics); and: *But, … the current model of spending time in gyne for that long or in surgery for that long,… that speaks to that idea of a mini-specialist. Yes, maybe you should need to have exposure to it [a specialty], you need to see the stuff, but if they saw it in a primary healthcare environment … that would prepare them better.* (BKZT7, clinical preceptor, Orthopeadics).

2.10. Operates at primary health care

A generalist medical practitioner was explained as someone who operates at primary health care level: *Okay, I think we do understand it that way, they'll be somebody who is trained and being able to manage conditions that they will see in their primary health setting and the conditions that they will see will encompasses many specialties* (CSMT7, clinical preceptor, Orthopaedics).