Original article

Barriers and promotors in receptivity and utilization of feedback in a pre-clinical simulation based clinical training setting.

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Abstract

Objective: Many studies have explored feedback effectiveness using interventions focused on feedback delivery. It is equally important to consider how learners actively receive, engage with and interpret feedback. This study explores how medical students receive and use feedback in pre-clinical skills training. ***Method:*** Focus group data from 25 purposively selected third-year medical students was thematically analysed. Four major themes and eight sub-themes related to the facilitators and barriers to feedback receptivity and utilisation to feed forward emerged from the data. ***Results and Discussion:*** Students were receptive to feedback when its purpose and content aligned with their personal objectives, when it was consistent between tutors, and when it involved developing longitudinal relationships. The clinical skills formative logbook feedback culture with a learning focus was perceived to be predictive of their future performance and they were likely to take feedback on board, emphasising the role of reflection in this process. The depth and timing of actual feedback use varied among students, and language barriers hindered decoding feedback. Students' self-regulatory focus on the feedback process had a dominant influence on their active use of feedback. ***Conclusion:*** Incorporating learner behaviour underlying feedback use should be considered when designing interventions to promote feedback engagement, feedback literacy skills and responsibility sharing in the feedback process. Establishing a learning culture that promotes shared responsibility between clinical educators and learners enable greater control by learners over assessment and feedback processes and a commitment to behaviour change.

Keywords: medical students; medical education; feedback; feedback receptivity; learner behaviour; responsibility sharing

Introduction

Focus of feedback usage is typically aimed at the feedback provider (clinical teacher), but very rarely is the onus placed on the feedback receiver (medical student). Given that studies have shown that medical students are often not satisfied with the quality and quantity of the feedback they receive[1-4], there is a need to better understand this phenomenon so that feedback can be made more useful to the feedback receiver. The linear transmission view of feedback from the educator to the learner, often referred to as the consumer model of education, implies that learners are passive recipients with relatively little responsibility to make feedback effective. This passive approach may explain the reduced satisfaction with feedback[5, 6]. Despite evidence that the feedback providers can amend the quality of feedback they provide, that alone would be insufficient to achieve 'quality'[7]. In addition, the feedback paradox emphasised by Withey stresses

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how students recognise the importance of feedback and complain about its quality, yet make limited use of it[8].

When feedback messages are conveyed from a provider to a receiver, engaging with and converting the feedback into learning activities that bring about desired change are clearly more important than simply receiving feedback[9]. Competency-based medical education supports the premise that feedback is a dialogue process, where learners understand feedback and use it to improve the quality of their work[10, 11]. Receiving feedback can be a difficult, impassive act requiring honest and critical self-reflection, with a commitment to improving[12]. Medical students are often unprepared and untrained in receiving and accepting feedback, and hence fail to use feedback to inform their subsequent clinical skills performance. More needs to be done by students to take responsibility to move learning forward to close the feedback loop[13].

Feedback is a 'double-edged sword', and the performance effects of feedback can be highly variable in that it does not always improve performance; it can, conversely, reduce performance[14]. Kluger and DeNisi's feedback intervention theory (FIT) explains how an individual respond to feedback[14]. Attentional shifts occur, depending on the characteristics of the feedback comments, nature of the task, and personality and situational variables. According to FIT, people regulate their behaviour by comparing it to committed goals. Higgins's self-regulatory theory explains how people have two regulatory foci, namely prevention and promotion[15]. Both personality and situational variables, such as the individual's self-efficacy and task-related self-regulatory focus, as either a promotion (things people do because they 'want to', which promotes eagerness for rewards) or a prevention (things people do because they 'have to', to prevent failure), determine how the feedback recipient chooses to change[16]. When an individual's promotion regulatory focus is activated, positive feedback motivates performance more than negative feedback. When the prevention regulatory focus is activated, negative feedback motivates performance more than positive feedback.

Feedback is therefore a complex process, and the factors that make feedback effective for learning remain considerably uncertain. Feedback effectiveness critically rests on how the learner proactively receives, engages and acts upon feedback, termed the 'proactive recipience'[17]. The importance of feedback therefore lies in its impact on recipients and not only on how it is provided[18, 10]. If we therefore wish students to be active feedback users, it is necessary to ask how feedback has been received, accepted and assimilated into performance. To effectively do this, numerous factors that influence learners' reception of feedback and strategies for using feedback should be analysed to confirm learner performance improvement within the feedback loop.

Prior research in medical education has outlined numerous reasons why students' use of feedback is sometimes limited[9, 19, 20], but there has been inadequate systematic exploration of these barriers. As feedback processes are complex interactions, assessing learners' feedback perceptions could provide educators with an understanding of the processes explaining learner behaviour towards feedback engagement in medical education.

There is insufficient investigation and research into the different ways medical students receive and use feedback within the context of undergraduate clinical skills assessment activities[21]. This is particularly relevant to the crucial and anxious transition phase during clinical training[22]. Since most educational research studies deal with written feedback on written tasks mirroring higher education practices[19], care needs to be taken if extrapolating the findings to other kinds of assessments, such as workplace-based clinical skills assessments. Given that competency-based medical education is changing towards constructivism[10], investigating medical students' recognition and understanding of feedback, as well as their strategies for effectively using feedback to facilitate the feed-forward process, need to be explored. The clinical skills setting was chosen for this study, as literature suggests that medical teachers include more direct observations and are more learner-centred in their approach to feedback[23,24]. Further, finding optimal ways to support learners' use of feedback may be inadequate if merely understanding the barriers to their feedback implementation; we also need to pay attention to what learner behaviours facilitate the use of feedback. This study thus explores medical students' feedback receptivity, the characteristics of feedback behaviour that could optimise its use and, more specifically, what students actually did with the formative assessment feedback they received following directly observed clinical skills logbook assessments.

Methodology

Context and setting

The study was conducted at the clinical skills laboratory at the Nelson R Mandela School of Medicine (NRMSM), University of KwaZulu-Natal (UKZN), Durban, South Africa. The school follows a six-year undergraduate, hybrid, problem-based curriculum, where three pre-clinical years precede three clinical years, reflecting an integration of the basic sciences with the clinical disciplines. At the beginning of the academic year, pre-clinical students are provided with a clinical skills logbook (Appendix 1) and a protocol with task-specific learning outcomes. Each theme runs for a period of six weeks, covering skills related to a specific body system. Students at the end of a theme are expected to demonstrate competence in conducting physical examination skills, which are specified in the module course as a DP (duly performed) requirement, using standardised/simulated patients. The purpose of the clinical skills logbook assessment is to formatively assess students' competence in performing a skill, and to provide structured feedback that answers three questions related to the task learning goals: 1) What was done well? 2) What was not done well? and 3) What could be improved in a similar situation in the future? This is based on directly observed performance of multiple clinical tasks by multiple supervising tutors and peers throughout the skills training period within the academic year. Students are informed that instead of marks, a global rating is provided to assist them in understanding their level of mastery of the skill. This rating would be failure (approximately <50%, if core competencies are missing or unreliable); weak pass (50-59%); competence (approximately 60-80%, with core competences demonstrated and reliable); or superior performance (approximately 80%, with core competences demonstrated using confident and appropriate technique, showing good knowledge and understanding of the skill). The clinical skills logbook formative assessment runs repeatedly throughout the second and third pre-clinical years, similar to the model of longitudinal integrated clerkships[25].

Study population

This study adopted an exploratory qualitative methodology with a purposive sample. Five focus group discussions were conducted with third year medical students, representative of their demographics and academic performance, and who had at least one year's exposure to the clinical skills formative logbook assessment feedback. Each group had five students (n=25) based on the consent and availability of the students. The use of a smaller group of participants from a common discipline provided a 'bounded environment', which can be useful for producing richer, more in-depth emerging discussions, and provides a mutual interpretation of ideas, perspectives and terms[26]. Focus groups were conducted until data saturation was reached.

Data collection

Focus groups were held for approximately 60 minutes with at least one of the researchers and a moderator. The moderator ensured neutrality in the discussion and that the findings were shaped by the participants' perspective, and not through research bias. The moderator ensured that all participants shared their experiences and perspectives. The moderator was a clinician and colleague involved in the educational activities of the clinical skills laboratory, and had no direct involvement in the research study. The sessions followed a semi-structured approach underpinned by open-ended questions. The researcher elicited the perceptions of the student cohort on their engagement with and use of clinical skills feedback, as well as conditions that promoted useful feedback. Clarification and responses were further probed as required to ensure that the content of the discussions covered the study questions. Questioning evolved according to the participants' responses. Discussions continued until saturation was reached, with no new content emerging.

Data analysis

The audiotaped focus group discussions were transcribed verbatim and qualitatively analysed using continuous systematic text condensation, a method of content and thematic analysis[27,28]. The authors read the text material several times to get familiar with the data and obtain an overall impression. The data focusing on the dialogue on participants' general perceptions of receiving and using feedback was systematically searched to identify patterns within the data. Different aspects of the feedback processes relating to learner behaviour towards feedback receptivity and use that emerged from the data were identified and coded using keywords and text chunks. The contents of each of the coded groups were condensed and summarised into themes (Table 1). With consensus of both authors, applicable sub-themes were identified and derived by generalising descriptions and concepts. The themes and sub-

themes, together with supporting quotations, are described below.

Ethics approval and consent to participate: Ethical approval for this study was granted (HSS/2213/017D) by the University of KwaZulu-Natal's Ethics Committee.

Results and discussion

In their discussions, participants consistently described facilitators and barriers to understanding and implementing feedback. Analysis of these discussions revealed four main themes. Within each main theme, two sub-themes related to the facilitators and barriers of feedback receptivity and use emerged, shown in Table 1.

Table 1: Main themes (feedback processes) and sub-themes (facilitators and barriers)

Main Themes	Sub-themes	
	Facilitators to feedback receptivity and utilisation	**Barriers to feedback receptivity and utilisation**
Feedback processes/learner behaviour relating to feedback receptivity and utilisation		
1. Knowledge/ awareness of the meaning and purpose of feedback	• Adequate 'feedback mental model' • Ability to decode feedback message	• Contradicted 'feedback mental model' • Inability to decode feedback message
2. Knowledge/ cognisance of strategies to implement feedback	• Adequate knowledge of appropriate strategies • Adequate knowledge of available opportunities	• Apathy to use appropriate strategies • Apathy to use available opportunities
3. Ability/agency to implement strategies	• Sense of empowerment • Ability to translate feedback into action	• Sense of disempowerment • Disability to transfer feedback into action
4. Motivation/ volition to use feedback	• Proactivity to feedback • Receptiveness to feedback	• Lack of proactivity to feedback • Lack of receptiveness to feedback

For each of the feedback processes relating to learner behaviour in Table 1, we discuss the facilitators and then the barriers to the participants' feedback receptivity and utilisation to feed forward. Each theme and sub-theme will be discussed and supported by illustrative quotes from the five focus group discussions (F1-F5).

Knowledge/awareness of the meaning and purpose of feedback

Facilitator: Adequate 'feedback mental model'

A mental model is a representation of someone's thought process about how something works. Students' awareness and understanding of what feedback meant to them and what feedback is for them[8], revealed aspects of their 'feedback mental model'. They described the purpose and feelings of receiving feedback as well as developing good relationships with their tutors as means of supporting their clinical skills improvement. One aspect of this was that the clinical skills feedback had the capacity to support their uptake of feedback by clearing the mind and increased their confidence and self-esteem in performing the skills:

...feedback that you get from skills clears the mind and gives us courage and confidence to apply the skills...and to improve it. [F3]

For the feedback process and feedback literacy to be enhanced, students need to both appreciate how feedback can operate effectively as well as develop opportunities to use feedback within the curriculum[29]. Some participants described more nuanced perceptions of the purpose and nature of feedback, which were associated with positive comments of satisfaction in that feedback helped them to reflect on their performance, identify their gaps and take action to improve:

It gives me a better picture on everything...on my last logbook session I saw that I lacked in sensory examination, so it helped me go back, reflect on my work and study and be able to link everything and understand better. [F4]

Maturity played an important role in students' sense of the value of feedback to self-regulate their learning[30]. Participants pointed out that feedback was becoming more relevant and taken more seriously as they progressed through the years, indicating how it motivated their situational self-regulatory focus on feedback use:

I think that as we are progressing in years, feedback is becoming more relevant, unlike in first year, second year, you knew that you only had to pass...you take it seriously now...I'll have to go to hospital and do this, so I must really know it. When they say this is the mistake, I must make sure that, immediately, I tackle it. [F2]

Students expressed the need to feel that their tutors

cared and made an effort to help them. Responding to feedback depended on establishing a good and trustful relationship with tutors to facilitate learning[31]:

Some tutors are really nice. You see they actually care. I mean they actually watch you and show you where you went wrong and then you actually say, okay, this is why it needs to improve…you want to do better. [F2]

Barrier: Contradicted 'feedback mental model'

Students expressed concern about the time constraints and the large groups that tutors had to assess. These factors minimised the amount of feedback provided and the time to review students' gaps and correct them. Minimal feedback can be inadequate to engage effectively, especially to correctly identify gaps in knowledge and to develop learning activities to close the gaps and improve performance. This contradicted students' understanding of the purpose of feedback and what it meant to them, hence their contradicted 'feedback mental model':

I would say tutors are rushed for time, because especially when you have a large group and you need everyone to perform the skill... And when you get to the end, when everyone is done, then you don't have time to review where each person made their error verbally, and to show the skills to each person. [F5]

Participants also mentioned that unfamiliarity with tutors can be intimidating to their self-esteem. This can lead to hesitancy in seeking feedback and hinder motivation to engage with feedback[32]:

I guess some tutors can be threatening, because there are some we only see during the logbook sessions, and we don't really know them that well…you usually won't ask them any further questions. It is also hard to get used to their techniques, first, and second, they are new people, so it creates more of a clinical barrier between you and them. [F5]

Students described how the inconsistency in feedback provision between tutors can be a challenge, with different feedback expectations affecting their use of feedback:

The feedback is constructive from some, but from some feedback is vague; sometimes the only comment that they place on our logbook is 'Keep practising', and that is vague in its own sense… And also the thing that gets mentioned about one or two tutors giving feedback...,when you go and the next session you have another tutor…still you are not able to get a superior performance. But with one tutor, he would

be able to track your performance and then say that there is an improvement. [F3]

Consistency between educators has often been found to be lacking, and is something that has been highlighted in previous studies[33, 7, 34]. As confirmed by our participants, longitudinal relationships with tutors are recommended, as this can impact favorably on their learning[35].

Facilitator: Ability to decode feedback message

Aside from students' awareness of what the feedback is for, to implement feedback they need to understand it first. Participants mentioned that engaging with the learning outcomes in the skills protocol might be influenced by students' ability to understand the medical terminology used or how to use it. They further demonstrated how maturity and the longer time spent in clinical skills training increased their knowledge and familiarity with the clinical terminology and assessment process, making feedback more acceptable:

Knowing the skills protocol before getting feedback does help with understanding the feedback now. Initially in second year when we started skills, we were not clued up with understanding the protocol and how to use it, but as we got closer to the mid-semester, it became clearer. [F5]

Murdoch-Eaton and Sargeant highlighted the role of learner maturity in decoding terminology and subsequent feedback recognition[30].

Barrier: Inability to decode feedback message

In contrast, participants expressed particular frustration about tutors' use of complicated language when commenting on their skills performance, which may limit feedback utility. This, coupled with difficulties understanding the tutor's accent, led to misunderstanding terminology used in and meanings of verbal feedback comments. Feedback givers may expect their remarks to be readily decoded and used; however, learners may need additional intervention to decode complicated texts and language[11, 36]:

I remember we were doing CNS…Dr X was telling us about the tuning fork. I wrote 128 or something, but when I started reading, it did not make sense, and my friend was lucky because she was in a different group; she said that the doctor was referring to different sizes, so sometimes we hear something and we hear it wrongly. So, I don't know why, maybe it could just been worded a lot simpler or…is it me not understanding English or…? [F5]

Similarly, the English language as a medium of learning while demonstrating and explaining a skill can be a challenge for the multicultural and heterogeneous student population. Language can be a barrier to understanding the feedback as well as engaging with and using feedback:

We actually practise…we just cannot make the four-minute or the eight-minute mark. It's the speed on how you speak…I don't know but if we were doing the OSCE [objective structured clinical examination] in Zulu…I feel like my speed would be a bit faster… language can become a barrier. [F2]

Another challenge with receiving feedback was the learners' understanding of the feedback providers' handwriting, which may lead to losing the meaning of the feedback comments. This in turn affects their use of feedback as a means to improve performance and learning:

The illegibility of the handwriting...I struggle to read sometimes…the purpose of the feedback is then pointless. I have sometimes been asked by the tutor if I can read their handwriting or if I understand the comment written, which is helpful. [F4]

Discussing the feedback with the tutor after assessing their skills can also be beneficial to helping learners develop strategies for future improvement[7]:

There is an opportunity for that with the tutors. You can clarify and go into more depth of what they have written...we can ask them more about the skill, just like [for] clarification to get more detail. [F4]

In summary, difficulties in using feedback can result from either learners' feelings about the feedback received or a lack of understanding about what feedback means to them. Feedback givers have a crucial function to transmit clear messages, and either avoid or explain medical jargon. The use of feedback by some learners may be restricted by their narrow views of the meaning of feedback. Encouraging learners to extend their feedback views so as to fully appreciate their active role in feedback practice may lead to greater commitment and sharing in the feedback responsibility.

Knowledge/cognisance of strategies to implement feedback

Facilitator: Adequate knowledge of appropriate strategies

Though students appreciated the role of feedback to improve learning, their responses regarding their behaviour and strategies for the actual use of feedback to promote learning and autonomy were mixed and varied significantly.

Some participants mentioned a passive engagement with feedback in that they at least read the feedback comments immediately after receiving them, but only acted on them before the OSCE. Though they seemed aware of certain strategies they could use, they also recognised that they could adopt these strategies better. There was hence a situational self-regulatory focus on feedback use with exams as the driving force:

I do not really go back to it most of the time. But sometimes I do look at it [feedback] immediately after getting the logbook and then you see where you are lacking, and next time when you are studying for OSCE, like you pay more attention to what you didn't do well…ideally I think I should work better on my feedback. [F4]

Others had mixed responses, which varied from a passive approach such as "internalising and making a mental note of gaps noted in the feedback" [F5] to more active approaches such as "referring to the lecture notes to identify gaps in performance and adding in comments to the clinical skills protocol" [F5], "taking on board feedback and rearranging things in the mind" [F1] and looking back and then setting targets for themselves in order to feed the comments forward to the next performance. One student observed:

I mainly internalise it. I take note of it at that moment because, with things like technique, there is not really anything you can write down; it is just things that you take on board. So, that's why I take mental notes a lot, I don't write down a lot of things, but from there I just try and rearrange things in my mind and say, okay now this is how I should do it. [F1]

As Butler and Winnie confirmed, feedback information can be used by learners to confirm, add to or restructure information in memory with the aim of reducing the discrepancy between current practice and desired practice, in order to answer Hattie and Timperley's third fundamental question, Where to next?[37,38]

The feedback-literate students were often aware of the need to take immediate action in response to feedback information[29]:

Whenever feedback is given, I will read it, and then I'll refer to the lecture notes and emphasise those points where I made my errors in the protocol, and

usually before the OSCE, I practise multiple times to perfect it before the next assessment. [F5]

Barrier: Apathy to use appropriate strategies

A participant suggested that the delayed feedback use behaviour in some students was sometimes due to apathy to invest time and effort due to other priorities, or that there could be a lack of know-how for the productive use of feedback. Reflecting on performance can be a challenge for students because of time constraints:

...logbooks are usually during the time of the ETTs (end of theme test)...I do not check my work after I get my feedback unless until the second logbook. We don't have any time to prepare for the logbook because we've got a lot of work to do, the lectures and stuff...Sometimes also they don't know what to do with the feedback immediately, that's what I've seen. [F1]

Facilitator: Adequate knowledge of available opportunities

Participants indicated in their discussions that, beyond the strategies they could adopt unassisted, they were also cognisant of opportunities to seek further support in the use of feedback. Some participants felt comfortable seeking peer feedback:

Let's say my skill of auscultation is bad, then I'd go to a friend to ask them how exactly you would do it, where did you place the stethoscope...I will make notes of what I did wrong, sometimes I draw little pictures. Otherwise, when it gets to OSCEs, I am not going to remember a thing that my tutor told me so I have to do it that day, try to see my downfalls and strengths. [F1]

Some students strived to establish the teachers' expectations and were proactive at seeking out feedback[39]:

If you have a tutor that is approachable for your logbook and you can ask them. [F1]

Students appreciated tutors assessing their self-reflection on their performance before feedback was given. They were conscious of how academics facilitated these possibilities, as it promoted their evaluative judgement to refine their internal feedback and self-regulate their learning[29]:

She [tutor] will always ask you what have you done well after I am done with the skill, and after you respond, she will say what can be improved...then you can know where you stand with the particular

skill. [F5]

Several participants pointed out that engaging with the clinical skills logbook as a feedback tool had a positive impact on learning, as they could see an improvement in their performance over time. They used the clinical skills logbook feedback to track their progress. They also mentioned that the written feedback in the logbook motivated and encouraged learning by facilitating peer feedback seeking:

It [logbook feedback] helped me to improve, I can see the improvement when I do the OSCE...when I got the feedback I went back to the logbook, and I asked the third years [senior students] for those skills to clarify my mistakes. So it really does give us encouragement. [F3]

Barrier: Apathy to use available opportunities

However, while some respondents seemed to understand that there was support, they were conscious that they often failed to take benefit of these possibilities due to the language barrier:

Sometimes it is the language barrier. You cannot actually ask what you want to ask from the tutors. Um...I feel they are just not getting it, what you are asking, and they keep telling you what you already know. Then you are just like - just leave it there. [F2]

Some respondents expressed relative ignorance of these possibilities to implement feedback and even demonstrated that they explicitly needed engagement with them, including assistance with how to utilise feedback effectively:

I mean you can maybe go and ask your peers, but honestly, if you take the time and read the thing [feedback], you get what they are saying...but sometimes, you find that you just do not read the thing or do not know how to look for assistance. [F2]

Though our participants were conscious of strategies that they could adopt in principle, there were difficulties in appreciating these strategies in practice due to language barriers. They also discussed problems with how to use assistance. Students sometimes need more guidance for developing their shared responsibility and commitment to feedback use, than simply a request for them to make use of assistance[40].

Ability/agency to implement strategies

Facilitator: Sense of empowerment

Most participants identified autonomy with feedback.

They stated that receiving feedback helped them to implement strategies for making better use of feedback. This meant spending more time to practise their skills, which facilitated their improvement in future performance:

I always do better on the OSCE than I do on the logbook sessions. So, I feel like the feedback tells me where I need to improve - it does help. When I go to the second logbook, then I know where I lack, it helps me to calculate the time that I spend in practice. So, I know when I spend this time, I get this rating. So, I add more time so I can get this rating. [F1].

They also indicated that providing feedback to peers was empowering, and they often learnt from the shared experience and responsibility. An opportunity for comparison with the views of others engages students in improving their capacity to make sound judgments[29]:

Giving feedback like tutors...feedback to peers shows me my own knowledge, like what I do not know...I cannot critique someone else on something I don't even know. So, that sometimes highlights what I can do. [F1]

Barrier: Sense of disempowerment

Participants spoke of reasons some students may not use feedback: they perceived never getting a better rating with a particular doctor even if they put in efforts to make changes to their performance. They were likely to ignore feedback due to a sense of learned helplessness, as it was perceived that past experience in implementing feedback had not been beneficial:

Sometimes, students use the feedback to work on a difficult skill, but then they know that Dr So-and-So will never give a superior performance to show changes made from feedback they had before. [F2]

Participants indicated that they experienced a challenge with implementing feedback if there was a clash in knowledge between the tutor and student, i.e. the tutor's expectation differs from the student's self-assessment of his or her performance:

The abdominal examination, say if you did comment on abdominal mass, shape, consistency, size, etc. sometimes, the tutors may have a different approach...then they say you left edge of the mass out, when maybe you actually did say it, but that was according to your step-wise approach, where they may have a different approach. So, they may say you have left it out and it feels more like criticism. [F5]

Bing-You and Trowbridge as well as Boileau et al. report that feedback incongruent with the learner's self-perceptions could be perceived as a personal attack and, as a result, no improvement in learner performance would occur[41,33].

The lack of self-confidence to perform a skill can be a challenge for some lower performing students. One participant commented that feedback was not always realistic and did not reflect what she knew, though she acknowledged failing to demonstrate the skill well, due to lack of confidence:

Sometimes the feedback is not so realistic because you find out, for example, sometimes you get like the feedback saying you don't know maybe the procedure, but you find out that you know it. You just failed to apply it. So, it's not realistic in a way because you know that sometimes you just lack confidence. [F2]

Learners often report anxiety with regard to the applicability of feedback to upcoming assessments[42]. They often did not see the connection and relevance of using feedback between logbook assessments with upcoming new themes concerning a different body system perceived as not related to the previous themes in a modularised curriculum. The perception that individual assessments were not related can lead to "behavioural disengagement" [43] as expressed by this participant talking about end of theme tests (ETTs):

The only thing is that it's practically impossible to correct and use feedback immediately, 'cos the OSCEs are viewed as separate from the ETTs, and the logbooks happened just before ETTs, so people are pretty much more focused on ETTs. And they view them as separate entities, even though they are pretty much the same; it's not viewed as one entity. So, people don't focus as much on the feedback once a theme is over but maybe [they do] four months later, close to the OSCE when you will need to revise all the themes. [F1]

Orsmond and Merry observe that students concentrating on only a particular theme failed to see the bigger picture to their skills development[44]. Price et al. reiterate that learners do not often realise the longer term potential benefits of feedback to their academic literacy development[40].

Facilitator: Ability to translate feedback into action

Participants thought specific feedback was actionable and acted on it; however, general feedback was not actionable and can be confusing, as they did not

know what to do:

What I do is that when I got specific feedback, I usually go focus on that aspect of the whole chapter or maybe anatomy, physiology or anything, but when the feedback is generalised like 'practise more', I struggle to actually know what to do. [F4]

Barrier: Disability to transfer feedback into action

Though Burke notes that students rarely know what and how to achieve development, as they are not trained on how to use feedback, our participants were in fact aware of interventions that could facilitate their engagement with feedback to transform their learning[45]. They mentioned that the lack of agency can arise when students believe that feedback is fixed and based on isolated skills that may not be seen as relevant to their future clinical practice:

So, we had a patient in the hospital, I think her problem was a tender hepatomegaly. So, then we wanted to check the JVP. We examined the hepatojugular reflux…then they told us no, you do not have to do it here because patient has a problem with the liver… do it in the alternative way. So, for now, we are told if you want to do the JVP, you do it like this. So we go to the logbook, we're only concerned about how we examine the JVP because everything that is related to checking it will be relevant during the logbook and it will be right during the logbook, but when you go to the clinic, it's not everything that you know will apply. So sometimes, you have to exclude others because of other things…so we need to have feedback integrating [the] normal and abnormal in the way we move forward. [F3]

Burch et al. and Boileau et al. confirm that feedback that considered students' objectives such as problem solving significantly improved participation in patient-centered learning activities and supported development of self-regulatory skills[46,33]. The feedback that represented the basics of moving forward as medical learners to self-regulate their learning could have a more lasting effect on the students as future doctors[9].

Motivation/volition to use feedback

Facilitator: Proactivity to feedback

Students were aware that they needed to be proactive to engage with feedback and put it into action[43]. They were grateful for the formative logbook feedback sessions, and used the feedback to revise the skills before the exams to enhance their performance:

I feel more competent…when I get the feedback,

because I can see the gaps in my knowledge… thank God we had logbooks. 'Cos it really helps us to think...I always use the lecture notes and protocol that we get for the skills to revise all the work that we've done for the themes, it just puts everything together very nicely. So, I use that as a very good tool to revise, analyse and see where to better my skill. [F1]*

Barrier: Lack of proactivity to feedback

Many participants, however, perceived that the unequal weighting of courses in the curriculum often led to their lack of intrinsic motivation to implement feedback, as they tried to do the minimum necessary to achieve a certain grade just to pass the OSCE:

I would not say time is a problem, because you create time for things that are important, but I think it is a medical school thing where there are certain things that are more important than others...for example, anatomy and skills, now you're focusing a lot on the 33% of your paper, anatomy, and you know there's 15% of skills. So, you're going to obviously spend a lot more time on anatomy, but say if you had a test on clinical skills or an examination every week, for example, it would push you more every week to know, like I have to get my skills done. [F5]

As Hounsell noted, a primary interest in the grades rather than an appreciation of their performance may explain students' apparent lack of input towards feedback[47]. Many participants were aware of the need to be constructive in finding and using feedback, but their lack of volition to use feedback limits them from facilitating feedback engagement[11]. Bing-You et al. stress that students must have a "commitment to change" that requires a state of receptiveness[48]. However, it is known that a combination of grades and narrative feedback influences students' likelihood to engage[42].

Facilitator: Receptiveness to feedback

Participants' motivation to engage with feedback often depended on the type of feedback comments as either positive or negative. Praise increased their receptiveness to feedback and to improve performance, as was acknowledged in their comments on the value of feedback. Participants were also aware of the need to use feedback for it to be purposeful:

The feedback is definitely helpful and motivating, and when they tell you what you did well, it's helpful, very constructive, motivates you to make the changes. I

can imagine also that the tutors will not be happy when they put in effort to give feedback and we don't use it. [F5]

To avoid a negative emotional impact from criticism, participants mentioned that this was possible by careful control of the manner in which feedback was presented. Constructive feedback delivered with encouragement coming first to make the subsequent criticism easier to digest and cope with, can be useful:

If a tutor encourages me and then criticises me in a constructive way, then you feel good about it...But when you have a tutor that just criticises and shouts at you, then that is not helpful...you are just going to feel nervous and not going to be able to show your skills properly. [F1]

Others commented on the need for tutors to use a respectful tone and that negative things could be said in a polite language so that nobody feels offended. The use of feedback would be easier when received from someone they perceived to be facilitative rather than destructive:

I think it is more the way in which the feedback is relayed than the relationship with the tutor...If they relay it in a way more conducive to learning, in a kinder way, then you want to take it on board and be less defensive...I think...we would learn more from someone who we feel is facilitating learning rather than being destructive. [F1]

Participants indicated that a combination of praise and criticism can be carefully managed in a friendly manner, which could be motivating to their learning:

It does not have to be soft, also because then the encouragement is gone. The feedback should be straightforward: if I did not do very well, they should tell me, but in a good way. [F3]

Praise alone may not always be helpful, since it diminishes the impact on learning by distracting from the task[14]. Higgins et al. confirm that students often show dramatic improvement in their work after critical rather than positive comments[50].

Barrier: Lack of receptiveness to feedback

While confidence and motivation should be encouraged, criticism with no opportunities for follow-up played an important role in affecting participants' feedback receptiveness:

When critical feedback is received, specifically for your technique and there is no other session after that to correct that technique, the feedback just becomes

a whole ball of confusion. [F1]

Defensive behaviour such as avoiding feedback without follow-up seemed to affect participants' feedback receptiveness. Academics placing the responsibility for feedback use primarily on students rather than offering a feedback follow-up, were perceived as inadequate, as learners' volition to use feedback depends on the impact feedback has on their learning.

General discussion and conclusions

Feedback must be used to encourage learning, although recipients may have difficulty engaging with it[19, 40]. We therefore aimed to explore factors that affected students' receptivity to and use of feedback, how their perceptions influenced the contribution feedback made to their learning, and how to promote the productive use of feedback. In this study, medical students' perceptions of the feedback process informed their beliefs and opinions of the quality of feedback processes that underpin feedback engagement. The data highlighted several insights into key factors beyond the feedback-sender input and looked at how establishing a culture of feedback receptivity modifies future learning and practice, including self-judgment, self-regulation and reflective learning in the clinical skills setting. Knowing the factors influencing feedback implementation can assist educators to identify suitable methods towards helping students share in the responsibility for their academic and professional development.

We found that one of the key factors influencing receptivity to feedback was students' relationships with their clinical teachers. The impact of feedback relies on the interpersonal interactions and relationships developed within an institutional culture[50]. To avoid tutor inconsistency, students advocated for longitudinal tutor-learner relationships as an educational alliance[12]. Prior knowledge of students' performance permits tutors to acknowledge their progress and observe behaviour change. Receiving feedback from a tutor they knew made the mutual trust between them valuable. This enhanced the credibility of the feedback received, as well as their engagement in the feedback process.

Participants also relayed certain difficulties with decoding feedback messages due to barriers to understanding feedback, such as tutor pronunciation of terminologies, language differences and illegible handwriting. Further, students felt one-liner feedback comments were limited and viewed as being non-

actionable, as these comments did not indicate to them if they were on the right track. To address these challenges, educators need to take their share of responsibility to ensure consistency and clarity of feedback presentation, check students' understanding of the feedback message, and be transparent in identifying actions to take for improvement. However, students also need to take responsibility in seeking clarification and being better prepared to understand common medical terminologies to decode feedback messages[11, 36].

In this study, nearly all participants recognised that for learning to take place there is the need for students to take responsibility by effectively acting on feedback. This underpins the development of self-regulation[36]. Winstone et al. indicate that students often depend on specific feedback that tells them exactly what to do[17]. To promote self-regulation, educators have a responsibility to develop practices that prevent students' dependence only on instructions, but instead to focus on developing their self-reflection and self-assessment. As stated in the study, participants were cognisant of appropriate opportunities that permitted them to share in the responsibility of giving and receiving feedback to develop their feedback literacy skills and ensure effective feedback processes. The need to seek and give feedback through peer feedback dialogue, along with teachers assessing their self-reflection on performance prior to feedback provision, provided them with chances to self-judge their work towards improving their reflective and self-regulation learning processes. We found that students used a variety of strategies for using feedback. While some of them would usually only address their feedback towards the clinical exams, reflecting a situational self-regulatory focus[9], others showed eagerness for being proactive. There were also students who indicated a passive engagement with feedback, mentioning no particular strategy for acting on feedback constructively, but rather referring to diffuse strategies[51, 19]. Handley et al. stress the need to be cautious in considering students who superficially read their feedback without taking action as a form of engagement with feedback similar to the notion of empty talk[43].

Our findings show that learners' responses to feedback are not uniform and that not all participants recognise the immediate need to engage with feedback productively. In particular, Bandura and Harrison et al. argue that students are not just passive 'consumers' of the learning and evaluation environment, but are

autonomous learners who strive to actively influence and adjust their learning environment according to their needs[52,9]. Findings from this study reinforce the situational regulatory notion, described by Van Dijk and Kluger as well as Durning and Artino, that learning and the context in which it takes place cannot be dissociated[16, 53]. They indicated the possibility of a situational regulatory focus on feedback use and the need for educators to not only consider methods of providing information to learners, but also to understand the situations in which information will or will not be used. The challenge in this respect is for educators to support students by incorporating into the curriculum activities to train students in skills of feedback implementation, such peer and self-feedback activities, to transform their cognisance into action. In addition, designing curricula that emphasise continuation and transference between assessments and learning objectives, such as feedback incorporating medical knowledge and clinical reasoning, allows feedback to offer a developmental function[33, 54]. Students reported that they were more likely to use feedback opportunities that allowed them to think critically with larger agencies through integrated skills that promoted their self-evaluation and self-directed learning, which led to building learner ownership.

Our students confirmed that self-affirmation alone is not the path to professional improvement and that for longitudinal growth, honest constructive feedback is essential. In applying motivation to performance-based feedback, intrinsic motivation would have a greater influence on feedback acceptance and performance improvement[55]. To promote increased learner autonomy and to support the development of a mindset of proactive receptivity within the medical education curriculum, there is a need to focus on approaches that boost learners' intrinsic motivation rather than depending on only externally controlled motivation[56]. As suggested from the findings in this study, the sharing of responsibility between the educators and the learners in the feedback process raises learners' intrinsic motivation to devote more of their time to analysing the feedback they receive as well as to show more interest in seeking feedback and taking up offers for further dialogue around feedback while at the same time placing greater emphasis on their engagement with feedback and the educators' sustained feedback practice.

By identifying and promoting the learner behaviour underlying the enablers of feedback engagement

and removing the numerous barriers to proactive feedback receptivity, we can nurture students as active feedback receivers and self-regulated learners. Achieving this would require designing feedback interventions that target learners' behavioural manifestations of feedback engagement such as enhancing their feedback knowledge, agency and motivation to use feedback. We propose that doing so should typically require a sharing of responsibility between teachers and learners within a more learner-focused model where learners contribute equally to the feedback process by being active givers, engagers and users of feedback, rather than passive recipients. This study therefore confirms the need to shift the focus of the feedback conversation from the individual to the learning context, from instructional feedback messages to self-regulation, and from the perspectives of the feedback provider to the recipient. Establishing a learning culture that actively encourages feedback receptivity promotes a commitment to behavior change[57] and student centered approaches to learning[58]. Ultimately, it is dependent on learners to appreciate the importance of and acknowledge their responsibility for acting on feedback and above all their autonomy within the learning process.

Limitations and recommendations

The study identified the students' perceptions of helpful and counterproductive elements that affected their receptivity to feedback. In this study, there is the possibility that certain perspectives may be over-represented and others under-represented, since only the students' perspectives could be interpreted to construct meaning. Since the feedback process is multifaceted and complex, it would be worthwhile establishing both tutors' and students' views about the factors they believed contributed to students' receptivity to feedback. Taking both perceptions into account may identify the extent to which any one is emphasised to move forward our understanding of the phenomenon of feedback. Studying different year groups would also be important in future studies.

Compliance with Ethical Standards

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