Education in Medicine Journal ISSN 2180-1932

ORIGINAL ARTICLE
Volume 7 Issue 3 2015
DOI: 10.5959/eimj.v7i3.382
www.eduimed.com

Knowledge and Perception of Medical Students on Feedback

Naekashri Jothi, Muhamad Saiful Bahri Yusoff

Department of Medical Education, School of Medical Sciences, Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia

ARTICLE INFO

Received : 03/07/2015
Accepted : 31/07/2015
Published : 15/09/2015

KEYWORD

Feedback
Knowledge
Perception
Medical Students

ABSTRACT

Introduction: Feedback and students' perception towards it has gained increasing attention in the educational literature recently, yet it is an under-researched area. The importance of feedback has not been perceived in a positive manner among medical students. This may be due to students' lack of knowledge on the concept of feedback and their awareness of the benefits of feedback. This study focused on students' knowledge on the concept of feedback and their perception towards the feedback system practiced in School of Medical Sciences, University Sains Malaysia. **Methods:** This was a cross-sectional study involving 433 numbers of students from year 1, 3 and 5 medical students. The variables that were included in this were the gender and their year of study. A validated questionnaire was used to perform this study. School and ethical committee clearance were obtained prior to the start of the study. Data obtained was analysed using Statistical Package for Social Sciences (SPSS) version 20. **Results:** Findings revealed that students have an average level of knowledge on the concept of feedback and have a neutral perception towards the feedback system that is practiced in School of Medical Sciences, USM. There was no association between students' knowledge level on feedback and their perception with their year of study and gender differences. However, although there was not much difference in students' perception level about feedback with their year of study but it was found those students' perception level decreases as their year of study progresses. It was also found that there was a poor correlation between medical students' knowledge level on feedback with their perception towards the feedback system in School of Medical Sciences, USM. **Conclusions:** The area in which it raised concern in students' perception about feedback was the factors that are involved in feedback practice, which are the givers of feedback, timing of feedback and the mode of feedback. Further study addressing students' poor engagement and involvement in feedback can be done and issues identified from this study can be included in together for further improvements of the feedback system.

CORRESPONDING AUTHOR: Naekashri Jothi, Department of Medical Education, School of Medical Sciences, Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia. Email: naeka_shri@yahoo.com

Introduction

The early concept of feedback originated as information that a system uses to make adjustments in reaching a goal which was appreciated by rocket engineers in the 1940s and it was further applied in many other fields (1). Feedback in the context of education is referred to as a control of a system which is done by reinserting the results of its performance into the

system (1). Feedback is also widely identified as a tool to enhance performance and practice in various educational settings (2-4) and has been confirmed by a number of influential meta-analysis study that feedback is the central key to student learning (5, 6). Besides that, feedback plays a decisive role in learning and development, within and beyond formal educational settings (4, 6) as feedback provides information about performance and gives indications for improvements (7).

Hattie divides feedback into 1) feedback on a task level, 2) feedback on a process level, 3) feedback on a self-regulation level, and 4) feedback on a self level (3, 4). Feedback on task refers to the level of providing answers for a completed task or offering comments about the completion of the task by differentiating the correct and incorrect answers, acquiring more different information building on the surface knowledge (3). This level of feedback is more powerful when it is related to faulty interpretation rather than insufficiency of information (8). Feedback on process level is the information that is provided in relation to the procedure, practice, method or process that is used in accomplishing a task or to create a product (3). This feedback acts as a cueing mechanism, thus leading to a more effective information search and use of tasks strategies (4, 9). A major benefit from this feedback is that it relates to students' strategies for error detection (10). Feedback on self-regulation level refers to the information that is provided which is related to a task or performance that leads to greater skills in self-evaluation that promotes confidence to engage in more challenging tasks or to advance a deeper understanding of a task (3, 4, 9). This feedback, it addresses the way learners monitor, direct and regulate actions towards the accomplishment of learning goals (3, 8, 11). This feedback is important in helping learners to create internal feedback by incorporating self-generated thoughts, feelings and action to enhance their future learning or self-regulation strategies (9, 12). Feedback on self level is the information that is provided about the self as a person (3) like any type of praise or criticism relating specifically to the student as a person (13). This feedback is the least effective compared to the other levels of feedback yet it is used most commonly in classrooms (13). This is because praise can be counterproductive and have negative consequences on students' self-evaluations of their ability (3, 13). It worthy to not that these feedbacks have two main functions which are directive and facilitative (5). Directive feedback tells students what need to be fixed or revised and it is specific, whereas facilitative feedback provides comment and suggestions to help students in their own revision and conceptualization (5, 13). Facilitative feedback enhances learning for high achievers compared to the novices (2). As Archer stated, effective feedback is the feedback in which information about previous performance is used to promote positive and desirable development (2).

Researchers found many factors influence the effectiveness of feedback that can be divided into internal factors (14-16), external factors (7, 17, 18) and biological factors (7, 14, 15, 19) were illustrated in Figure 1. The impacts of feedback can occur at students (6, 16, 18, 20), teachers (21-23), organizational (2, 24) or public (24) level (Figure 1). The key message is that effective feedback is a vital strategy to ensure effective learning and teaching in any educational settings (4, 17, 22, 23, 25). Without effective feedback, the learning and teaching process might be at the stake.

However, in medical education context, it seems that medical students persistently dissatisfied with the feedback that they receive (21). One possible reason is due to poor knowledge of the students on feedback and lack of awareness about the benefits of feedback. The topic feedback to students is an under-researched area although feedback functions as the central to the development of an effective learning (6). From that notion, this study aimed to answer three questions 1) What is the level of medical students' knowledge and perception about feedback?, 2) Does gender and years of study significantly associate with knowledge and perception about feedback?, 3) Is there any significant correlation between knowledge and perception about feedback

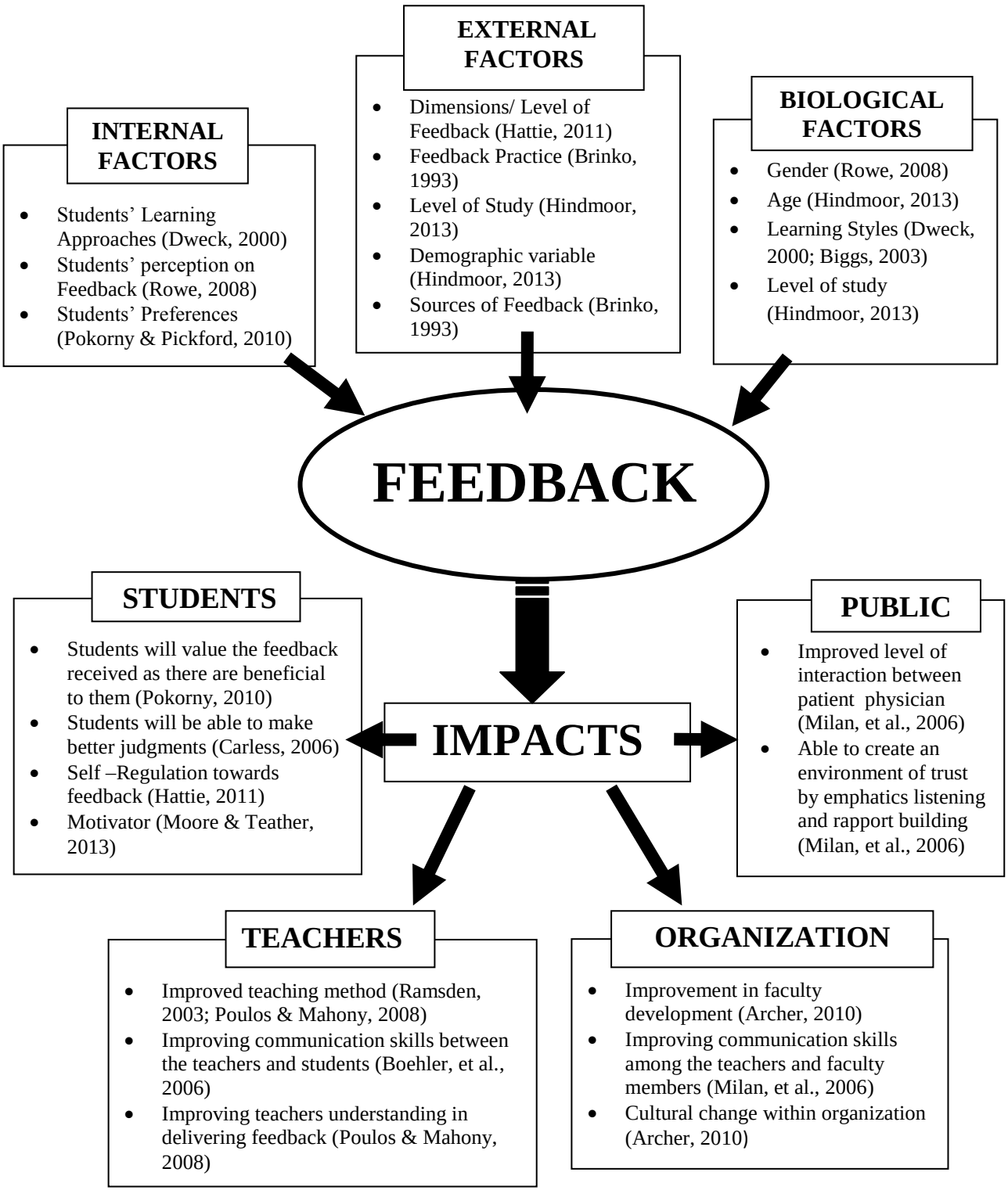

Figure 1: Factors that influence effectiveness of feedback and its impacts

Method

Study population

The study population was medical students in Universiti Sains Malaysia (USM) medical school. Year 1, 3 and 5 medical students were selected as study subjects to represent different phases of medical training – Phase I, II and III. The number of medical students according to the year of study was 158 for year 1 (phase I), 188 for year 3 (phase II) and 192 for year 5 (phase III) – the total number was 538.

Sample size and sampling method

Based on the Krejcie and Morgan (1970) sample size table with the confidence interval of 95% and margin of error (α) = 0.05, the calculated sample size was 145 for each phase using. The adjusted sample size after 10% dropout rate was 161 for each phase - the total sample size was 483. Since the total medical students available were 538, researchers decided to invite all medical students to participate in this study.

Research tools

A set if survey scale was administered to the selected medical students. The survey scale consisted of 20 multiple true false questions to assess the knowledge about feedback (Appendix 1: Subscale 1) and 15 items (five Likert-scales; 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agreeable, 5 = strongly agreeable) to measure the perception about feedback (Appendix 2: Subscale 2). The list of questions and items for the measured domains were listed in Table 1 and Table 2.

Table 1: List of Domains and the Items for the Subscale 1

Domains	Item Number
Content of Feedback	Q1, Q12 and Q16
Occasion of Feedback	Q6, Q8 and Q10
Givers and Receivers of Feedback	Q7, Q11 and Q19
Mode and Mechanism of Feedback	Q4, Q5, Q9, Q15 and Q18
Reason Feedback is fed back	Q2, Q3, Q13 and Q17
Setting of Feedback	Q14 and Q20

Table 2: List of domains and items for the Subscale 2

Domains	Item Number
Importance of Feedback	Q1*, Q9* and Q14
Factors that Influences Feedback	Q2*, Q11* and Q15*
Tutors' Skills in Giving Feedback	Q3*, Q4, Q6*, Q8* and Q10
Students' Readiness in Receiving Feedback	Q5*, Q7, Q12 and Q13*

* Reverse scoring items: 5 to 1, 4 to 2, 3 to 3, 2 to 4, 1 to 5

The survey scale was validated for the content validity and face validity prior to the study. Based on the pilot study, the content and face validity index were 0.73 and 0.79 respectively, that support validity of the survey scale (26).

Table 3: Profile of participants

Variables		n (%)	Total (%)
Gender			
	Male	142 (32.8)	433 (100)
	Female	291 (67.2)	
Age			
	19	117 (27.0)	
	20	27(6.2)	
	21	91 (21.0)	
	22	52(12.0)	433 (100)
	23	97 (22.4)	
	24	39 (9.0)	
	25	9 (2.1)	
	26	1 (0.2)	
Race			
	Malay	221 (51.0)	
	Chinese	134 (30.9)	433 (100)
	Indian	65 (15.0)	
	Others	13 (3.0)	
Religion			
	Islam	231 (53.3)	
	Buddhist	91 (21.0)	433 (100)
	Hindu	53 (12.2)	
	Christian	50 (11.5)	
	Others	8 (1.8)	
Entry Qualification			
	STPM	25 (5.8)	433 (100)
	Matriculation	376 (86.8)	
	Others	32 (7.4)	
Year of study			
	Year 1	146 (33.7)	433 (100)
	Year 3	138 (31.9)	
	Year 5	149 (34.4)	

Statistical analysis

Data was analyzed by Statistical Package for Social Sciences (SPSS) version 20. Data was entered and given serial numbers; data entry errors were checked, explored and cleaned. For the item in subscale 1, 'True' answer was coded as 1 and 'false' answer had been coded as 0. For

the items in subscale 2, all negative items were reverse scored as stated in Table 2, and then later all items were recoded (5 to 4, 4 to 3, 3 to 2, 2 to 1 and 1 to 0) for the purpose of analysis. The confidence interval was set at 95% and margin of error (α) of 0.05. Assumptions were made before running the statistical tests. Demographic data was analyzed using descriptive statistics by calculating the means and standard deviations. The statistical tests that were used to analyze the data in this study were Independent t-test, Mann-Whitney, Analysis of Variance (ANOVA), Kruskal-Wallis and Pearson's correlation analysis.

Result

Out of 538 medical students, 433 (80.5%) responded to the survey. Their profiles were summarised in Table 3.

Findings revealed that students have an average level of knowledge on the concept of feedback (Table 4) and had a neutral perception about the feedback system in SMS, USM (Table 5).

Table 4: Mean score of medical students' knowledge on feedback

Domains	Max score	Mean score (SD)
1. Content of feedback	3	1.73 (0.52)
2. Occasion of Feedback	3	1.72 (0.69)
3. Givers and Receivers of Feedback	3	2.20 (0.86)
4. Mode and Mechanism of Feedback	5	3.10 (1.07)
5. Reason feedback is fed back	4	3.68 (0.63)
6. Setting of Feedback	2	1.56 (0.57)

Table 5: Mean score of medical students' perception on feedback

Domain	Max score	Mean score (SD)
1. Importance of Feedback	12	6.16 (5.14)
2. Factors that Influences Feedback	12	4.74 (2.00)
3. Tutors' Skills in Giving Feedback	20	11.23 (2.61)
4. Students' Readiness in Receiving Feedback	16	9.64 (2.39)

Table 6 shows that areas of concern in students' perception about feedback were related to the domain 2 (i.e. the factors involved in a feedback practice). Otherwise, the feedback practice was neutrally perceived, indicating a lot of rooms for improvement.

Table 7 shows that there were no associations between students knowledge level of feedback with their year of study except for domain 2. For the domain 2 it seems that year 1 and 5 significantly had higher level of knowledge than year 3.

Table 7 also shows that male and female students had equal level of knowledge about feedback except for the domain 6. It seems that, in the domain 6, female students had higher level of knowledge than male students

Table 6: Mean Score of Students' Perception towards Feedback according to Each Items

No	Domains & Items	Mean perception (SD)
Domain 1: Importance of Feedback		
1	The number of times feedbacks given are not frequent enough	2.05 (1.03)
9	Feedbacks given are more evaluative rather than descriptive.	1.74 (0.80)
14	There is a time allocation for the feedback session after the teaching and learning process has completed.	2.36 (0.99)

Table 6: Continued

No	Domains & Items	Mean perception (SD)
Domain 2: Factors that Influences Feedback		
2	Feedback is usually given by the instructors rather than one-self and peers	1.58 (0.99)
11	Feedback is not given in an immediate manner; it is given in delayed time. E.g. feedback will be given in the next class stating how the previous task given could have been performed better.	1.77 (0.91)
15	The most commonly used mode of feedback is in written form during the learning process.	1.40 (0.83)
Domain 3: Tutors' Skills in Giving Feedback		
3	Feedback given to you is in equal quality with your performances. For e.g.: you may think that your performance was up to the mark but the instructor may have given a poor feedback on your performance on certain task.	2.00 (0.79)
4	The feedback given to you are constructive and immediate	2.31 (0.87)
6	Positive and negative feedback are given in the form of appraisal without stating why it was well or poorly performed	2.19 (0.94)
8	There is gender biasness by the instructors in giving feedback to the students. For example, male students receive feedback in a more harsh way compared to the female students	2.41 (1.02)
10	Feedback given is in a specific manner rather than a generalized feedback	2.27 (0.86)
Domain 4: Students' Readiness in Receiving Feedback		
5	You feel sad, offended or critiqued by the feedback that are given to you either from your instructors or peers	2.31 (0.95)
7	Feedback given are perceived as credible, knowledgeable and well-intentioned	2.64 (0.76)
12	There is always a response and interactions between students and instructors during the feedback session	2.33 (0.86)
13	When negative reviews are given during the feedback session, I tend to feel very insulted and condemned and I tend to dislike the feedback session	2.36 (0.98)

0 – 1.99: more negative than positive perception on feedback
2 – 2.99: neutral perception towards feedback
3.0 – 4.00: more positive than negative perception towards feedback

Table 7: Mean score of students' knowledge on feedback based on years of study and gender differences

Domains	Variables	[1, 2]Mean (SD)/ [3, 4]Median (IQR)	[1]F-stat/ [2]t-stat/ [3]X^2-stat/ [4]z-stat	p-value
1. Content of feedback	Year of Study[1]			
	1	1.68 (0.55)	1.146	0.319
	3	1.74 (0.50)		
	5	1.77 (0.50)		
	Gender[4]			
	Male	2.00 (1.00)	-1.074	0.283
	Female	2.00 (1.00)		
2. Occasion of Feedback	Year of Study[3]			
	1	2.00 (0.00)	4.447	< **0.001**
	3	1.00 (1.00)		
	5	2.00 (0.00)		
	Gender[2]			
	Male	1.80 (0.72)	0.806	0.101
	Female	1.69 (0.67)		

Table 7: Continued

Domains	Variables	[1, 2]Mean (SD)/ [3, 4]Median (IQR)	[1]F-stat/ [2]t-stat/ [3]X^2-stat/ [4]z-stat	p-value
3. Givers and Receivers of Feedback	Year of Study[1]			
	1	2.23 (0.88)	0.206	0.814
	3	2.20 (0.85)		
	5	2.16 (0.84)		
	Gender[2]			
	Male	2.06 (0.89)	0.491	0.200
	Female	2.26 (0.83)		
4. Mode and Mechanism of Feedback	Year of Study[1]			
	1	3.05 (1.02)	1.797	0.167
	3	3.24 (1.01)		
	5	3.01 (1.16)		
	Gender[2]			
	Male	3.01 (1.08)	0.518	0.234
	Female	3.14 (1.06)		
5. Reason feedback is fed back	Year of Study[3]			
	1	4.00 (0.00)	1.526	0.466
	3	4.00 (0.00)		
	5	4.00 (1.00)		
	Gender[2]			
	Male	3.67 (0.63)	0.873	0.096
	Female	3.68 (0.64)		
6. Setting of Feedback	Year of Study[3]			
	1	2.00 (1.00)	0.375	0.829
	3	2.00 (1.00)		
	5	2.00 (1.00)		
	Gender[4]			
	Male	1.00 (1.00)	-3.114	**0.002**
	Female	2.00 (1.00)		

[1]One-way ANOVA[1] test, p value of less than 0.05 as significant at 95% of confidence interval. Assumptions were met: normality of distribution was normal and homogeneity of variance test (Levene's test) was not significant (p value more than 0.05)
[a]Post Hoc Tukey HSD test: Domain 2: Year 1 vs Year 3, p = 0.013; Year 1 vs. Year 5, p = 0.546; Year 3 vs. Year 5, p = 0.164
[2]Independent t-test, p value of less than 0.05 as significant at 95% of confidence interval. Assumptions were met: normality of distribution was normal and homogeneity of variance test (Levene's test) was not significant (p value more than 0.05)
[3]Kruskal Wallis Test - assumption of homogeneity of variance test (Levene's test) was not met, p value less than 0.05. Poc Hoc tests (Mann-Whitney Test p value of less than 0.05 as significant at 95% of confidence interval): Domain 2 -Year 1 vs. Year 3, p = <0.001; Year 1 vs. Year 5, p = 2.784; Year 3 vs. Year 5, p = <0.001
[4]Mann Whitney Test - assumption of homogeneity of variance test (Levene's test) was not met; p value less than 0.05

Table 8 shows that there was no association between years of study and students' perception on feedback except for the domain 2. It appears that, in the domain 2, year 1 significantly had higher score than year 3. There was no association between gender and students' perception on feedback.

There is no correlation between the students' knowledge level and their perception towards feedback (r = 0.02, p value <0.05). Therefore, the finding clearly suggested that there is no correlation between knowledge of feedback and perception towards feedback practice.

This study revealed that USM medical students have an average level of knowledge on the concept of feedback and a neutral perception about the feedback system that is currently practiced in School of Medical Sciences (SMS), USM. Level of knowledge about feedback did not associate with years of study and gender. It was also found that students' perception on feedback did not associate with gender and years of study and level of knowledge did not correlate with students' perception about feedback. Apart from that, this study found several areas of concern that related to givers of feedback, timing of feedback and mode of feedback.

Table 8: Mean score of students' perception on feedback based on years of study and gender difference

Domains	Variables	Mean (SD)	*F-stat/ **t-stat	p-value
1. Importance of Feedback	Year of Study*			
	1	6.06 (1.88)	0.959	0.384
	3	6.40 (2.11)		
	5	6.04 (2.06)		
	Gender**			
	Male	6.21 (2.14)	0.382	0.105
	Female	6.13 (1.96)		
2. Factors that Influences Feedback	Year of Study*[a]			
	1	5.05 (2.20)	4.124	**0.017**
	3	4.38 (1.83)		
	5	4.78 (1.92)		
	Gender**			
	Male	4.84 (2.16)	0.702	0.249
	Female	4.69 (1.92)		
3. Tutors' Skills in Giving Feedback	Year of Study*			
	1	11.32 (2.96)	1.488	0.227
	3	11.44 (2.43)		
	5	10.93 (2.40)		
	Gender**			
	Male	11.12 (2.94)	0.229	< 0.950
	Female	11.28 (2.45)		
4. Students' Readiness in Receiving Feedback	Year of Study*			
	1	9.63 (2.53)	0.415	0.661
	3	9.77 (2.33)		
	5	9.51 (2.33)		
	Gender**			
	Male	9.58 (2.42)	0.255	< 0.950
	Female	9.66 (2.39)		

* One-way ANOVA[1] test, p value of less than 0.05 as significant at 95% of confidence interval. Assumptions were met: normality of distribution was normal and homogeneity of variance test (Levene's test) was not significant (p value more than 0.05)
[a]Post Hoc Tukey HSD test:
Domain 2: Year 1 vs Year 3, p = 0.013; Year 1 vs. Year 5, p = 0.546; Year 3 vs. Year 5, p = 0.164
** Independent t-test, p value of less than 0.05 as significant at 95% of confidence interval. Assumptions were met: normality of distribution was normal and homogeneity of variance test (Levene's test) was not significant (p value more than 0.05)

Discussion

Overall, students have a neutral perception about the feedback practice in SMS, USM and they did not perceive feedback in a positive manner in helping them throughout their course. This finding is similar to a research conducted in Australia where it was found that feedback was not perceived positively in terms of quality and quantity (27). This is also consistent with another study that reported medical students tend to dissatisfy with the feedback that they receive (21). Perhaps, the medical school should look at strategies to improve its feedback practice.

This study found year 1 medical students had the highest level of knowledge on feedback, followed by year 5 and then year 3 students. Knowledge levels among the three years of study were acceptable as they had an average level of knowledge on the concept of feedback. This finding was similar to a previous study that reported years of study did not significantly affect on how students value and perceive feedback (15). This study also found gender did not associate with feedback. In contrast, a previous study found that feedback was more valued by females and viewed as important for emotional reasons compared to male students (15). One of the implications from this finding is that feedback must be given to all medical students, regardless of medical training phases or gender, to improve their learning.

This study found that year 1 medical students had more positive perception about feedback

they received than year 3 and year 5 medical students. This is consistent with a study that found junior students seemed to be more satisfied with the content of feedback that they have received (28). However, considering PBL as the main method of learning, the year 3 students should have the highest score because theoretically they should receive and give a lot of feedback during their learning process. In addition, as years of study increase, students are expected to be self-directed learners and are able to make their own judgment on their own performances rather than they are given the information directly on how to improve on their future performances (28) – however this study found vice-versa. One implication is that the medical school should put serious efforts to improve this situation so that the progression to the next medical training phase will provide better feedback to promote and facilitate the students' learning experience.

Interestingly, 'the reason feedback is fed back' had the highest mean score, indicating that medical students are aware of the benefits of feedback such as reducing discrepancies between current understandings and performance on a goal (3, 22), and feedback also improves the teaching and learning process (6). It shows that the students have desire to know about their learning performance to help them for future improvements (16).

The areas of concern identified by this study are related to feedback providers, timing of feedback and mode of feedback. This is consistent with a previous study that reported challenges in feedback were related to poor quality and low quantity of feedback, time problems, inconsistencies in general and lack of clear requirements and expectations are consistent with the finding of this study (11, 29). It is understood that students feel more secured to receive feedback from a credible source like tutors or mentors, and conversely they may not perceive comments from peers as feedback (17). In addition, most student perceived feedback was not given immediate enough to help them before the next class (17) and getting delayed feedback causing frustration and dissatisfaction (30). On top of that, the longer the time taken in delivering feedback to the students, the less relevant it becomes to the students (31). Therefore, these factors should be taken into account to improve the current feedback practices.

This study found that there was no correlation exists between students' knowledge on feedback and their perception towards feedback. This suggests that regardless of how much they know about feedback, the feedback practices must be done appropriately otherwise it will result in dissatisfaction and frustration (30). One possible reason is that students are grade-oriented and only interested in feedback that provides them with "correct" answers (6). Therefore, adopting programmatic feedback might be able to improve the current feedback practices (25).

This study has several limitations that should be considered for future research. First, this study was conducted in a medical school therefore the generalisability of the finding should be done with caution. Second, the survey scale was only validated for content and face validity, therefore the measured construct might be inaccurate due to the unknown status of its construct validity and internal consistency. Third, the obtained data was depending on the students' interpretation that varied depending on their level of understanding about feedback, thus might lead to inaccuracy of the obtained results. Lastly, this study only focused on students' general perception on feedback that limited its generalisability. Considering these limitations, results found in this study should be interpreted with caution and within context.

Conclusion

In general, USM medical students had an average level of knowledge and neutral perception about the feedback practices. There was no association between students' knowledge level and their perception on feedback with the genders and the years of study. However, the students' perception level on feedback decreased as years of study progress. There was no correlation between the students' level of

knowledge about feedback and their perception about feedback.

Reference

1. Ende J. Feedback in Clinical Medical Education. Med Educ. 1983;25:777-81.
2. Archer JC. State of the science in health professional education: effective feedback. Medical Education. 2010;44(1):101-8.
3. Hattie J, Timperley H. The power of feedback. Review of Educational Research. 2007;77(1):81-112.
4. Yusoff MSB. Using feedback to enhance learning and teaching. Pulau Pinang: Centre for Academic Excellence & Student Advisory and Development, Universiti Sains Malaysia; 2013.
5. Black P, Wiliam D. Assessment and classroom learning. Assessment in education. 1998;5(1):7-74.
6. Carless SE. Differing perceptions in the feedback process. Studies in Higher Education. 2006;31:219-33.
7. Hindmoor P. Do students perception of the purpose and use of feedback change between year 1, 2, and 3 of a programme? A comparative study. Oxford: Institute for Learning, University of Oxford, 2013.
8. Kluger AN, DeNisi A. The effects of feedback interventions on performance: a historical review, a meta-analysis, and a preliminary feedback intervention theory. Psychological bulletin. 1996;119(2):254.
9. Masson M-E, editor. Collecting student perceptions of feedback through interviews. PAAL 2011 Conference Proceedings; 2001.
10. Shute VJ. Focus on formative feedback. ETS Research Report Series. 2007;2007(1):i-47.
11. Ferguson P. Student perceptions of quality feedback in teacher education. Assessment & Evaluation in Higher Education. 2011;36(1):51-62.
12. Crisp BR. Is it worth the effort? How feedback influences studentsâ€™ subsequent submission of assessable work. Assessment & Evaluation in Higher Education. 2007;32(5):571-81.
13. Gamlem SM, Smith K. Student perceptions of classroom feedback. Assessment in Education: Principles, Policy & Practice. 2013;20(2):150-69.
14. Dweck CS. Self-theories: Their role in motivation, personality, and development: Psychology Press; 2000.
15. Rowe AD, Wood LN. Student perceptions and preferences for feedback. Asian Social Science. 2009;4(3):p78.
16. Pokorny H, Pickford P. Complexity, cues and relationships: Student perceptions of feedback. Active Learning in Higher Education. 2010;11(1):21-30.
17. Brinko KT. The practice of giving feedback to improve teaching: What is effective? Journal of Higher Education. 1993:574-93.
18. Hattie J, Gan M. Instruction based on feedback. Handbook of research on learning and instruction. 2011:249-71.
19. Biggs JB. Teaching for quality learning at university: What the student does: McGraw-Hill Education (UK); 2011.
20. Moore C, Teather S, editors. Engaging students in peer review: Feedback as learning. 22nd Annual Teaching Learning Forum; 2013; Perth: Murdoch University.
21. Boehler ML, Rogers DA, Schwind CJ, Mayforth R, Quin J, Williams RG, et al. An investigation of medical student reactions to feedback: a randomised controlled trial. Medical Education. 2006;40(8):746-9.
22. Poulos A, Mahony MJ. Effectiveness of feedback: The students' perspective. Assessment & Evaluation in Higher Education. 2008;33(2):143-54.
23. Ramsden P. Learning to teach in higher education: Routledge; 2003.
24. Milan FB, Parish SJ, Reichgott MJ. A Model for Educational Feedback Based on Clinical Communication Skills Strategies: Beyond the" Feedback Sandwich". Teaching and learning in medicine. 2006;18(1):42-7.
25. Yusoff MSB, Hadie SNH, Rahim AFA. Adopting programmatic feedback to enhance the learning of complex skills: a cognitive load-based perspective. Med Educ. 2014;48(2):104-12.
26. Cook DA, Beckman TJ. Current concepts in validity and reliability for psychometric instruments: theory and application. The American journal of medicine. 2006;119(2):166. e7-. e16.
27. Krause K-L, Hartley R, James R, McInnis C. The first year experience in Australian universities: Findings from a decade of national studies: Centre for the Study of Higher Education, University of Melbourne Melbourne; 2005.
28. Ali N, Lubna A, Rose S, editors. An investigation of Undergraduate Psychology Students' Perception of and Engagement with Feedback across the Three Years of Study. Proceedings of the 17th Annual

Conference of the Education, Learning, Styles & Individual differences Network; 2012; Cardiff, UL: Elsin:Education, Learning, Styles, Individual differences Network.
29. Scott G. Accessing the student voice. Higher Education Innovation Program and the Collaboration and Structural Reform Fund, Department of Education, Science and Training, Canberra: Commonwealth of Australia. 2005.
30. Hounsell D. Student feedback, learning and development. In: Slowey M, Watson D, editors. Higher education and the lifecourse. Buckingham: SRHE and Open University Press, 2003. p. 67-78.
31. Parkin HJ, Hepplestone S, Holden G, Irwin B, Thorpe L. A role for technology in enhancing students' engagement with feedback. Assessment & Evaluation in Higher Education. 2012;37(8):963-73.

Appendix 1

Subscale 1: Students' Knowledge on the Concept of Feedback (What is Feedback?)

For each items given below, tick true or false for the statement provided.

#	Items	True	False
1	Feedback is an evaluation process.		
2	Feedback provides room for further improvements.		
3	Feedback plays an important role in improving future performance of the students		
4	In feedback, students' performance are mentioned to them		
5	Feedback is more effective when it contains specific data.		
6	Feedbacks are received most during the clinical years rather than the pre-clinical years		
7	Feedback can only be provided by the instructors		
8	Feedback is given after the observation of how the students performed after a given activity		
9	Non-verbal behaviour like head nods and pat on the back from the instructor provides clear ideas that students performed well.		
10	Feedbacks must be given to students in regular mode.		
11	Feedbacks can only be given by a third person like an instructor		
12	Feedback is only given in a verbal form.		
13	Feedback is given to reduce the gap between the "already known knowledge" and "the new knowledge"		
14	Feedback is only practiced in a classroom setting like the lecture room and a classroom environment.		
15	Positive feedback must be given in the form of appraisal without stating why it was well performed.		
16	Feedback is conceptualized as information provided by an agent (e.g. teachers) regarding how well one performed in a given task.		
17	Feedback provides opportunity for learning throughout the programme.		
18	Timing in giving feedback does not play an important role. For e.g., immediate and delayed feedback has the same effect on students.		
19	Feedback trains students to make better judgment in their future performances.		
20	Feedback is more preferred to be received in the safest environment as possible.		

Appendix 2

Subscale II: Students' Perception towards the Feedback System that is being used in School of Medical Sciences, USM

For each question given below, tick on the number that best describes your opinion on the issue.

1	2	3	4	5
Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**

#	Items	1	2	3	4	5
1	The number of times feedbacks given are not frequent enough					
2	Feedback is usually given by the instructors rather than one-self and peers					
3	Feedback given to you is unequal quality with your performances. E.g. you may think that your performance was up to the mark but the instructor may have given a poor feedback on your performance on certain task.					
4	The feedback given to you are constructive and immediate					
5	You feel sad, offended or critiqued by the feedback that are given to you either from your instructors or peers					
6	Positive and negative feedback are given in the form of appraisal without stating why it was well or poorly performed					
7	Feedback given are perceived as credible, knowledgeable and well-intentioned					
8	There is gender biasness by the instructors in giving feedback to the students. E.g. male students receive feedback in a more harsh way compared to the female students					
9	Feedbacks given are more evaluative rather than descriptive.					
10	Feedback given is in a specific manner rather than a generalized feedback.					
11	Feedback is not given in an immediate manner; it is given in delayed time. E.g. feedback will be given in the next class stating how the previous task given could have been performed better.					
12	There is always a response and interactions between students and instructors during the feedback session.					
13	When negative reviews are given during the feedback session, I tend to feel very insulted and condemned and I tend to dislike the feedback session					
14	There is a time allocation for the feedback session after the teaching and learning process has completed.					
15	The most commonly used mode of feedback is in written form during the learning process.					