RESEARCH ARTICLE

Benefits of Reflective Writing in Health Care through the Vivid Lens of House Officers [version 1]

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Abstract

This article was migrated. The article was marked as recommended.

Introduction: Reflective writing, a complex human activity is one of the innovative pedagogies to promote deep learning among medical students and doctors. Despite its potential to facilitate learning, there is limited literature on evaluation of various purposes of reflective writing in medical education. Hence, aim of this study is to develop an instrument and evaluate the perceptions of house officers about benefits of reflective writing.

Methods: Mixed method study followed AMEE 87 guidelines for questionnaire development. The study was carried out from Oct 2018-Feb 2019 in a dental college in Islamabad. A 30-items questionnaire was developed by following these steps: (1) conduction of literature review, (2) item development, (3) conduction of cognitive interviews and (4) pilot testing. Coding and interpretation of transcribed data and notes taken during cognitive interviews was done to finalize three main themes (learning, self-regulation and alteration in clinical behavior) identified in literature review. In pilot testing, participants were asked to rate the purposes of reflective writing on a three-point Likert scale (Agree, do not know and disagree). Data was analyzed using SPSS version 22.

Results: All of nineteen house officers (n= 3 for cognitive interviews, n= 16 for pilot testing) had previous experience of writing reflections using Gibb’s reflective cycle. Thirteen (81%) out of sixteen house officers agreed that reflective writing improves learning, helps in self-regulation and alters clinical behavior, two (13%) did not know about the three themes that were finalized in cognitive interviews and one (6%) did not agree.
Discussion and Conclusion: Reflective writing improves learning, helps in self-regulation and alters clinical behavior in the selected house officers. This study may inspire medical education experts to include reflective writing as a part of formal undergraduate medical and dental curriculum to enhance student's learning experience.

**Keywords**
Reflective writing, critical thinking, self-regulation, clinical behavior.
Introduction
Medical education help students to acquire knowledge, skills and attitudes necessary for the medical health profession (Schei, Fuks and Boudreau, 2018). Therefore, it is the responsibility of medical teachers to introduce right pedagogy among their students (Sukhato et al., 2016). Reflective writing is one of the latest pedagogies being used in medical education. It is a complex human activity (Anne de la Croix, 2018). It has been proliferating in educational programs to enhance development of reflective capacity, to extend empathy by deep understanding of patient’s experiences of their illness and to promote practitioner well-being (Boud and Walker, 1998; Wald and Reis, 2010). Hence, the ultimate goal of medical education is to produce knowledgeable, up to date and skillful professionals with undertaking of maintaining and developing expertise over the period of their lifelong career (Swanwick, 2014).

Reflection is a metacognitive process in which a person is engaged in attentive, critical, exploratory and iterative interactions with his thoughts and actions to change them, hence it is powerful equipment of experiential learning (Fragkos, 2016; Larsen, London and Emke, 2016; Asiah Mohd Sharif, 2017). Attention to self and critical reflection on the situation are two necessary elements for continued competence (Sanders, 2015; Fragkos, 2016). Reflective writing engages one in the process of deep understanding and continuous learning (Jorwekar, 2017). It can improve individual’s specific learning situation to have greater self-awareness, professional expertise, critical thinking and resilience, therefore provide improved service to clients (Jorwekar, 2017). Active thinking is only possible when we reflect upon events about what we have done good or bad, how differently we have done it and how it can be done in a better way (Chesterman, 2014). However, ‘reflective zombie’ is the term used in the literature for those students who just follow the steps of the thought process they are being told rather to engage themselves in authentic reflection process (Anne de la Croix, 2018).

Several frameworks have been developed and are used for reflective practice to enhance student’s learning experience and professional development. John Dewey in 1938, Schon in 1983, Kolb in 1984 and Driscoll in 1994 introduced various models for reflection (Donald A. Schon, 1984). Whereas the most useful framework is given by Gibbs in 1988 and he introduced a structured reflective cycle consisting of organised stages (Gibbs, 1988; Friddis and Rogers, 2017).

Reflective practice in teaching is used as a self-assessment tool. It is also useful for professional development, enhancing student’s learning experience and improving memory as it is used to recall previous experience (Larsen, London and Emke, 2016). Usually reflective diaries, portfolios, blogs, journals, poetry, some short stories, novels or books are used for written reflections (Korthagen, 1993). Most of the work on reflective writing has been done in nursing (Moattari, 2007) and Larsen et al. (2016) stated that it is rarely a formal part of the daily work of medical education or practice. Checklists, portfolios and other tools that are being used to encourage reflection that are isolated from original theories of reflection and reflective practice, hence the main essence of reflection has been lost (Larsen, London and Emke, 2016). Despite the importance of reflective writing, there is general lack of awareness of different purposes of reflection for learning. Literature search revealed a gap that there is a need of in-depth inquiry regarding reflection. Hence, there is a need to develop an instrument that can evaluate various purposes of reflective writing (Mann, 1999; Mann et al., 2007; Fragkos, 2016).

Methods
Mix method study with sequential qualitative and quantitative components following guidelines of AMEE 87 for questionnaire development in educational research was carried out over five months (Oct 2018-Feb 2019) in one of the dental colleges in Islamabad. Selected house officers had previous experience of reflective writing during their rotation in the Prosthodontic department.

Data Collection: Approval of the study was obtained from Institutional Review Board Committee of the institute. A purposive sampling (n=19) of house officers was done for cognitive interviews and later pilot testing. The participants selection was based on their written reflections according to Gibb’s Reflective Cycle during their routine rotation in the Prosthodontic department (reflective writing is compulsory part of their logbook in Prosthodontics rotation only). For cognitive interviews, three categories of house officers were selected (average, above average and below average) based on their undergraduate academic record of final professional examination provided by the administration upon request. The purpose of choosing three categories of house officers was to get maximum input of their responses to finalize items. Participants were informed about the research implication and their participation was voluntary. Informed consent was taken before cognitive interviews and the pilot testing. House officers who participated in cognitive interviews were excluded in pilot testing.

Questionnaire: A 30-items questionnaire (Supplementary File 1) was developed by following these steps: (1) conduction of literature review, (2) item development, (3) conduction of cognitive interviews from three house officers and (4) pilot testing. The initial questionnaire had 32 items under four themes emerged from literature review (learning, self-
regulation, alteration in clinical behavior and organizational skills) which were then reduced to 30-items under three themes after cognitive interviews. The first theme was “learning” which comprised of seven items. The second theme “self-regulation” included fourteen items and the third theme was “alteration in clinical behavior” that comprised of nine items.

Three-point Likert scale (agree, do not know and disagree) was used to ask participants to rate the purposes of reflective writing. The rationale behind using three-point Likert scale was to get clear responses. House officers at early career may have been unable to distinguish between the narrow boundary of strongly agree and agree or vice versa. This was evaluated in the cognitive interviews and during discussion about the points of Likert scale.

Data collection technique for cognitive interviews and pilot testing: After an informed consent and appropriate briefing, data was first collected from cognitive interviews from three selected house officers for quality assurance procedure. The technique used was a mixture of think aloud and concurrent verbal probing as it better identifies potential errors (Artino et al., 2014). A newly developed questionnaire was then distributed among sixteen house officers for pilot testing.

Data Analysis: For cognitive interviews, coding and interpretation of transcribed data and written notes taken during the interview was done for alterations in the items. For pilot testing, the data was analyzed using SPSS version 22. Frequencies were calculated for all items as well as the items under three themes (learning, self-regulation and alteration in clinical behavior).

Ethics approval for this study was granted on 20th November 2018 by Dr. Hina Mahmood, Secretary, Institutional Review Board Committee of Dental Section, Islamabad Medical and Dental College, Islamabad (Ref IMDC/DS/OG/280).

Results/Analysis
Among nineteen participants of the study, three participated in cognitive interviews and remaining sixteen participated in pilot testing (100% response rate). See Table 1:

Cognitive Interviews:

The decision of rephrasing, omitting and repositioning the statements of few items was done after conduction of cognitive interviews. See Table 2:

Pilot Testing:

Thirteen (81%) out of sixteen respondent house officers agreed that reflective writing improves learning, helps in self-regulation and alters clinical behavior. Two (13%) did not know about the three themes that were finalized in cognitive interviews and one (6%) did not agree. Sixteen house officers (100%) agreed that reflection helps in understanding self and situation, monitoring own work progress, setting goals and meeting them in time. See Table 3:

Discussion
The present study has evaluated the perceptions of house officers about the various purposes of reflective writing. Majority of the house officers (13/16; 81%) in pilot testing agreed that reflective writing does enhance learning, helps in self-regulation and alters clinical behavior.

Frenk et al. (2010) stated that outdated and static curricula without addition of innovative methods for students learning is the reason for production of ill-equipped graduates from underfinanced institutions as it mismatches professional competencies, patient and population priorities (Julio Frenk, Lincoln Chen, Zulfiqar A Bhutta, Jordan Cohen, Nigel Crisp, 2010). In medical education, various learning theories have been provided in literature and reflective practice in health care education is one of those learning theories (Dacre, 2001). Mostly reflections have been explored in nursing and limited data is available for the reflective writing in medical and dental schools (Moattari, 2007). Previously, it has

| Table 1. Participant's demographics |
|-----------------------------------|
| **No of participants** | **Average Age (Years)** | **Gender** |
| Cognitive interviews | 03 | 23 | 01 M 02 F |
| Pilot testing | 16 | 23 | 06 M 10 F |
| Item No (initial/final) | Item's statement before conducting cognitive interviews | Categorical response by participants | Coding and interpretation by author | Finalized items for pilot testing (Total=30) |
|------------------------|----------------------------------------------------------|-------------------------------------|------------------------------------|-------------------------------------------|
| 2/2                    | Do you think reflection re-organizes your previous knowledge for **real life**? | Above Average Elaborate real life | Rephrase                           | Practical life                           |
| 4/4                    | Do you think reflection has marked effect (impact) on self-directed and **continuous learning** with aim of improving knowledge skills and competences for **personal reasons or to develop career skills**? | Below Average Change continuous learning to ongoing learning or lifelong learning | Rephrase                            | Lifelong learning Personal and professional growth? |
| 6/6                    | Do you think reflection helps in improving understanding of self and **situation**? | Above Average Explain situation and re-write complete sentence | Rephrase                           | Developing Present situation so that future encounters with the similar situation are informed from the previous encounters |
| 7/7                    | Do you think reflection is an ongoing process and its **value** depends upon **repeated cycles of action, reflection and action**? | Average Confusing and time taking statement. Make it clear Below Average Not clear about the action, reflection and again reflection | Rephrase                           | Importance Repeated cycles of any action, then reflecting on it and then again doing modified action |
| 9/9                    | Do you think reflection enhances quality of your work to achieve your **goals**? | Above Average Explain which goals? | Rephrase                           | Personal and professional goals |
| 11/11                  | Do you think reflection is a process with a definite purpose that changes your **future response to situations**? | Above Average Make it future response to similar situation Average Dealing situation next time? Below Average Future response is not clear | Rephrase                           | Modifies your future response to similar situation. |
| 12/12                  | Do you think reflection **before an action** has the potential for greater personal growth and learning? | Below Average Make statement easy regarding reflection before action | Rephrase                           | Before doing any action/ procedure |
| 14/14                  | Do you think deeper reflections possibly change your **beliefs and point of view**? | Above Average Change beliefs into existing beliefs or just write point of view | Rephrase                           | Point of view about anything |
| 17                     | Do you think reflection helps in documentation? | Above Average and Average Same question as filing and record keeping | Omit                               | Omitted                                  |
been explored that writing reflections every day for two consecutive weeks had positive learning influence on medical students analyzing their clinical performance (Larsen, London and Emke, 2016).

In our study fourteen (88%) house officers agreed that reflection improves learning. It does improve learning due to critical thinking (Jorwekar, 2017). A systematic review stated that reflective writing is related to learning, professional identity development, and critical thinking in medical and health professions students (Fragkos, 2016). Thirteen house officers (81%) agreed that reflection increases desire for more theoretical knowledge and learning new practical skills. Personal knowledge incorporates knowledge of skills and practices and personal understandings of people and situations (Michael Eraut, 2010). Nine studies in a systematic review reported that reflections in clinical portfolios helped in measurable change in student skills and attitudes and one study reported a change in student behavior (Buckley et al., 2009).

Reflective practice leads to deeper understanding from experience or situation and enable us to understand our strengths, acquisition of knowledge, skills, attitudes and values (Fragkos, 2016). In our study, fourteen (88%) house officers agreed that reflection increases desire for more theoretical knowledge and learning new practical skills. Personal knowledge incorporates knowledge of skills and practices and personal understandings of people and situations (Michael Eraut, 2010). Nine studies in a systematic review reported that reflections in clinical portfolios helped in measurable change in student skills and attitudes and one study reported a change in student behavior (Buckley et al., 2009).

Reflective practice leads to motivation and self-directed learning (Fragkos, 2016). Reflective practice maximizes deep and life-long learning (Hargreaves, 2016). In our study fourteen (88%) participants agreed that reflection has marked effect on their learning.

### Table 2. Continued

| Item No (initial/ final) | Item’s statement before conducting cognitive interviews | Categorical response by participants | Coding and interpretation by author | Finalized items for pilot testing (Total=30) |
|--------------------------|-------------------------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------------|
| 19/23                    | Do you think reflection helps in teamwork?            | Above Average More related to theme alteration in clinical behavior | Re-position                        | Re-positioned at no 23 under theme alteration in clinical behavior |
| 24/22                    | Do you think reflection enables you to improve your ability to work with patients? | Below Average Make it desire to work with patients | Rephrase & Re-position | Desire to work with patients Re-positioned at no 22 |
| 25                       | Do you think reflection helps you to work with colleagues in a professional manner? | Above average Already included as teamwork | Omit                               | Omitted                                      |
| 26/24                    | Do you think reflection makes your communication purposeful? | Below Average Is it about communication skills? | Rephrase & Re-position | Improves your communication skills Re-positioned at no 24 |
| 28/26                    | Do you think reflection increases your general confidence to interact with patients? | Above Average Add colleagues along with patients | Rephrase & Re-position | Interact with patients and colleagues Re-positioned at no 26 |
| 30/28                    | Do you think reflection helps in reducing medical errors? | Below Average Medical errors are not clear Average Related to medical or dental? | Rephrase & Re-position | Treatment errors Re-positioned at no 28 |
| 32/30                    | Do you think reflection increases problem solving ability of complex and unusual cases? | Average Explain complex and unusual cases | Rephrase & Re-position | Complicated cases Re-positioned at no 30 |
| THEME 1: LEARNING | AGREE | DO NOT KNOW | DIS-AGREE |
|------------------|-------|-------------|-----------|
| FREQUENCY (Number of participants; F) | 14 | 1 | 1 |
| PERCENTAGE (%; P) | 87.5 | 6.2 | 6.2 |

| ITEM NO | ITEM CODE | F | P | F | P |
|---------|------------|---|---|---|---|
| 1 | Depth of knowledge | 12 | 75 | 4 | 25 |
| 2 | Re-organization of previous knowledge | 15 | 93.8 | 1 | 6.3 |
| 3 | Improvement in procedural skills | 12 | 75 | 2 | 12.5 | 2 | 12.5 |
| 4 | Self-directed and lifelong learning | 14 | 87.5 | 2 | 12.5 | none | none |
| 5 | Responsibility for own learning | 15 | 93.8 | 1 | 6.3 | none | none |
| 6 | Understanding of self and present situation | 16 | 100 | none | none | none | none |
| 7 | Ongoing process with modified action | 14 | 87.5 | 2 | 12.5 | none | none |

| THEME 2: SELF-REGULATION | AGREE | DO NOT KNOW | DIS-AGREE |
|--------------------------|-------|-------------|-----------|
| FREQUENCY (Number of participants; F) | 11 | 3 | 2 |
| PERCENTAGE (%; P) | 68.7 | 18.7 | 12.5 |

| ITEM NO | ITEM CODE | F | P | F | P | F | P |
|---------|------------|---|---|---|---|---|---|
| 8 | Monitoring own work progress | 16 | 100 | none | none | none | none |
| 9 | Enhancement in work quality | 13 | 81.3 | 2 | 12.5 | 1 | 6.3 |
| 10 | Thinking about strengths and weaknesses | 14 | 87.5 | 2 | 12.5 | none | none |
| 11 | Modification in future response | 14 | 87.5 | 2 | 12.5 | none | none |
| 12 | Greater personal growth and learning | 14 | 87.5 | 2 | 12.5 | none | none |
| 13 | Improvement in outcome of situation | 13 | 81.3 | 2 | 12.5 | 1 | 6.3 |
| 14 | Change point of view by deeper reflection | 10 | 62.5 | 5 | 31.3 | 1 | 6.3 |
| 15 | Self-management | 12 | 75 | 2 | 12.5 | 2 | 12.5 |
| 16 | Management of schedules | 6 | 37.5 | 4 | 25 | 6 | 37.5 |
| 17 | Record keeping | 6 | 37.5 | 6 | 37.5 | 4 | 25 |
| 18 | Multitasking | 7 | 43.8 | 6 | 37.5 | 3 | 18.8 |
| 19 | Goal setting and meeting them in time | 16 | 100 | none | none | none | none |
| 20 | Decision making | 9 | 56.3 | 3 | 18.8 | 4 | 25 |
| 21 | Resolution of serious disagreement at workplace | 8 | 50 | 7 | 43.8 | 1 | 6.3 |

| THEME 3: ALTERATION IN CLINICAL BEHAVIOR | AGREE | DO NOT KNOW | DIS-AGREE |
|------------------------------------------|-------|-------------|-----------|
| FREQUENCY (Number of participants; F) | 13 | 2 | 1 |
Jorwekar (2017) stated that self-directed learning is the important aspect of adult learning in medical education. Reflection not only increases skill and knowledge but also helps students in communication. Reflection is the strategy by which attitude and communication among students can be inculcated. Present medical education needs to include such methods which can assure strong communication skills (Jorwekar, 2017). Hence communication between health care professional and patient is very important. In our study twelve (75%) agreed that reflection improves communication skills.

One more advantage of reflection is that it also changes student’s behavior (Fragkos, 2016). If one reflects on the clinical experience, one can reduce medical errors by changing clinical behavior, learning new knowledge and practical skills (Fragkos, 2016). In our study thirteen (81%) agreed that reflection alters clinical behavior and it reduces treatment errors.

Reflective writing strategy if used regularly and effectively with supervision, can have various roles and benefits among doctors and undergraduate medical students. It may help them in becoming better future health care professionals by inculcating the habit of life-long learning (Taranikanti et al., 2019). Limited studies are available in the literature that have evaluated the main purposes of reflective writing in depth. Reflective writing shall be included in the undergraduate curriculum from the initial phase of medical school due to its vast benefits as shown in our study.

**Limitations:** We only used four out of seven steps to develop questionnaire as it served the purpose of our study (Artino et al., 2014). We obtained only the response process validity from potential respondents through cognitive interviews. Moreover, the study could have been expanded to include multiple institutes with large sample size and to compare the differences in different cohorts of house officers working in different institutional settings.

**Conclusion**
This study confirms that reflective writing enhances learning, helps in self-regulation and alters clinical behavior of dental house officers in the preliminary findings from pilot testing. The results of this study may inspire medical educationists in Pakistan to include reflective writing as a part of formal undergraduate and postgraduate medical and dental curriculum to develop the habit of reflection and to enhance student’s learning experience so that they may gain more knowledge and improve their practice.

**Take Home Messages**
- Reflective writing should be made mandatory for dental students going through clinical clerkships and house officers as this will help to inculcate a habit of reflective learning for the future professional life.
- The importance and purpose of reflective writing needs to be emphasized from the beginning of medical education.
Notes On Contributors
Anbreen Aziz is a Dental Health Professional in the Department of Medical Education at Hazrat Bari Sarkar (HBS) Dental College, Islamabad, Pakistan.

Usman Mahboob is Director of Institute of Health Professions Education & Research (IHPER) at Khyber Medical University (KMU) Peshawar, Pakistan.

Tayyaba Saleem is a Clinical Professor and Head of Department of Prosthodontics and Dental Health Professional in the Departmt of Medical Education at Dental section of Islamabad Medical and Dental College (IMDC), Islamabad, Pakistan.

Declarations
The author has declared that there are no conflicts of interest.

Ethics Statement
Ethics approval for this study was granted on 20th November 2018 by Dr. Hina Mahmood, Secretary, Institutional Review Board Committee of Dental Section, Islamabad Medical and Dental College, Islamabad (Ref IMDC/DS/OG/280).

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Migrated Content

Version 1

Reviewer Report 29 April 2020

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Samar Ahmed
Ain Shams University Faculty of Medicine

This review has been migrated. The reviewer awarded 4 stars out of 5

What a beautiful piece of research. Reflective writing and its study through the perception of house officer learners is an outstanding topic. The topic is by far the deepest technique to tackle deep learning. I am particularly happy with the methodology an addition might be called for for a longitudinal study on these learners to establish achievement and attainment.

Competing Interests: No conflicts of interest were disclosed.

Reviewer Report 08 April 2020

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BALAJI ARUMUGAM
TAGORE MEDICAL COLLEGE AND HOSPITAL

This review has been migrated. The reviewer awarded 5 stars out of 5

THANKS FOR THE INVITE TO REVIEW THIS ARTICLE. The research article adapted mixed method study design which is a commendable work and the methodology, scientific approach, qualitative analysis, expression of the results were clear and kudos to the entire team of authors for doing a fantastic work on the usually non practiced but recommended by the medical educators worldwide. The study concludes
that reflective writing enhances learning, helps in self-regulation and alters clinical behavior of dental house officers. My questions to the authors: 1. Is this writing the reflection daily / weekly / regular activity among dental house officers? 2. Did the participants had any formal training / workshops in medical education to write reflection? 3. I got fascinated with the qualitative results of cognitive interviews - its surprising that the dental house officer not even having post graduate degree how come they were able to give so many responses clearly (Close to final responses)??? - Please clarify????

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 07 April 2020

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**Mohamed Al-Eraky**
University of Dammam

This review has been migrated. The reviewer awarded 5 stars out of 5

Thank you for sharing this interesting study. The authors reported the perceptions of house officers on the significance of reflective writing on their learning, self-regulation and alteration of clinical behaviors. The manuscript is well-organized, and the discussion is coherent and structured. Good job! Participants of the study reported that reflection alters clinical behavior and it reduces treatment errors. This point may be a venue for a future study to investigate ‘how’ reflective writing actually contribute to improved learning and better clinical practice using examples from their clinical practice. Yet, perhaps instead of house-officers, dentists might be recruited to provide evidence on how reflection advances their practice. Another point related to the application of reflection models. As you know, there's no such thing as one model fits all in medical education. For instance, ‘each’ institutional design model, (e.g. Gagne, Merrill, ADDIE, 4C/ID, ...etc.) can be used for particular types of session, based on different contextual variables. Likewise, it would be interesting for the authors plan a future study on how and why to select the appropriate framework for reflection (e.g. Gibbs, Kolb, Schön, Driscoll, ...etc.). This would provide a valuable hands-on manual for reflection. I hope my comments would motivate you to plan a series of future studies, inspired by this one. Good luck!

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 03 April 2020

https://doi.org/10.21956/mep.19986.r30408
Sateesh Babu Arja
Avalon University School of Medicine

This review has been migrated. The reviewer awarded 4 stars out of 5

It is a very interesting manuscript. I read it with much interest. Reflective writing became an integral part of the medical education, especially in workplace-based settings. Reflective writing in medical education is followed in many ways, including logbooks or work diaries or portfolios. The literature review in this article is up to date, and references are relevant. But I am a little bit confused with the research methodology. I have read the previous reviewers' comments and authors' replies. I am not aware of AMEE's guide for the development of the questionnaire. If I were the author, I would have called the first three interviews as pilot testing for developing questionnaire, and other 16 interviews are as part of the actual study (just a thought). The other comment which is a surprise time that there was no mention of Kolb's reflective learning theory in the entire manuscript. The discussion has drawn appropriately based on results. Thank you.

Competing Interests: No conflicts of interest were disclosed.

Reviewer Report 01 April 2020
https://doi.org/10.21956/mep.19986.r30406

Deb Halder

This review has been migrated. The reviewer awarded 5 stars out of 5

Note on Title, Abstract and References
The title of this paper is well articulated that provides what the paper tends to explore and establish. The abstract serves all the required information of the paper so that the paper can be visualized. The references are up to date with recent findings of researchers though few have been used from 80s and 90s publications but not yet irrelevant. Note on Introduction and Methodology: The introduction of this paper is evidence based, orderly and argumentative. But the authors could have provided a research question that fosters a hypothesis and this could have provided a directed objective without its tacit expression of all these. The methodology provided detail of the way and procedures of the research which is imitable, adaptable for any researcher from any corner of the
Note on Results and Discussion: The results and discussions of this paper is vivid and clear. The strength of this paper is to have triangulated the quantitative and qualitative study. The table is vivid and there is no discrepancy of interpretation with the scope of the paper. The authors could have added few suitable graphs in order to make the results more readable. Conclusion: The authors have firm conviction on the limitation of the research which is praiseworthy and honest approach. The concluding remark is very knit and condensed that explains the results and discussions in a nut shell. Thanks for the effort for gifting such a well-constructed paper.

**Competing Interests:** No conflicts of interest were disclosed.

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P Ravi Shankar
American International Medical University

This review has been migrated. The reviewer awarded 4 stars out of 5

This is an interesting article on reflective writing and its use in health professions education. Reflective writing is being increasingly used though as the authors mention it may not always be used correctly. I was not aware of the term ‘cognitive interviewing’. The authors can explain this in detail for the benefit of the readers. Gibb's reflective cycle can also be explained briefly. I assume there were two main objectives for this paper. The first was to examine the evidence in favor of reflective writing in health professions education. The second was to develop a questionnaire through review of literature and the process of cognitive interviewing and pretest the same. The authors can reframe the manuscript so that these two objectives are kept separate in my opinion. A description of how exactly the process of cognitive interviewing was used to develop the questionnaire can be provided. Tables 2 and 3 do describe this process but may need greater clarification for readers. What were the parameters examined during pre-testing of the questionnaire? Did this result in any modification of the instrument? Are three respondents enough for the purpose of cognitive interview? The questionnaire developed by the authors can be shown in the Appendix. Some reorganization may be required to further strengthen the flow and development of ideas.

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 31 March 2020
Felix Silwimba
University of Lusaka

This review has been migrated. The reviewer awarded 5 stars out of 5

This article informs us of a very important dimension to medical education. Reflective learning is important for our generation of learners and should be encouraged everywhere. I'm motivated and encouraged by this article.

*Competing Interests*: No conflicts of interest were disclosed.