ORIGINAL ARTICLE

Case write-ups and reflective journal writing in early clinical years – Have these been "worthy" educational tools?

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Abstract

Introduction: Case write-ups and reflective journals have been used as assessment tools of learning in clinical rotations in Yong Loo Lin school of medicine. It is timely to review the current process of conducting these assessments and effectiveness as an assessment tool. This study aims to understand faculty outlook towards these assessments.

Methods: This is a study that involves a survey-based questionnaire with both closed and open-ended questions, sent out to faculty marking the students' assignments. This survey was anonymous & voluntary and was disseminated by administrative assistants. The purpose of this survey was to collect the feedback from faculty about current process with intentions of improving the effectiveness of these assessments. The suggestions for improvement were incorporated in the survey and faculty was invited to comment over these suggestions and provide further suggestions if any.

Results: Fifty-two responses from faculty were collected and analysed. Ninety percent of respondents thinks that this is an effective tool to assess and promote self-directed learning. Qualitative feedback was received about need of improvement in a) alignment of the submissions timings with rotation postings b) marking rubric to incorporate factors such as case complexity and weightage to different components of case write-ups, c) timely feedback to students, and d) follow up on action plans.

Conclusion: Case write-ups and reflective journals are still effective learning and assessment tools. They promote self-directed learning and clinical analysis in students. Feedback and action plans are the backbone of these assessments and optimal utilisation of these is recommended.

Keywords: *Undergraduate Medical Education, Case Write-ups, Medical Assessments, Reflective Journals*

Practice Highlights

- Case write-ups promote critical analysis & clinical judgement and reflection develops metacognition.
- Students should be guided and encouraged to choose cases to promote self-directed learning.
- Marking rubrics need revising and faculty development on how to utilise them.
- Timing of submission needs to be improved to facilitate feedback and follow-up.
- Direct and timely feedback to students and follow up on actions plans improve utility.

I. INTRODUCTION

The medical curriculum has many assessments designed over professional years to assess the knowledge and competence of medical students such as OSCE, Mini CEX, Case write ups, Reflective Journals, multiple choice questions (MCQs), portfolios etc (Miller, 1990). Few assessments such as Mini-CEX and OSCE have gained popularity over last few decades as there is robust evidence in support of these assessments as a tool to promote and assess students' learning. Patrício et al. (2013) and Mortaz Hejri et al. (2020) have explored the utility of OSCE and Mini CEX respectively in undergraduate & postgraduate education and concluded that reliability, flexibility, and validity of these assessments are the strengths that make them widely acceptable. With growing research in field of medical education assessments, it is important and wisely to seek understanding of current written assessments such as

case write-ups and reflective journals in terms of their effectiveness and processes in conducting them. McLeod (1989) surveyed the students and faculty about the effectiveness of case write-ups and written assignments in the undergraduate medical curriculum. There was broader agreement among students and faculty that these assessments were useful educational tools, however, there were concerns about the variability of marking criteria and standard of evaluation (Fortson A, (n.d.); Larsen et al., 2016). Over the years, these assessments have been standardised by using an assessment template that guides the students and marking rubric to assist assessors to mark students to reduce interrater variability (McGlade et al., 2012; McLeod, 1987).

Written assignments on patient cases in which a student had participated in clinical care have been a de rigueur component of posting assessments in the Yong Loo Lin School of Medicine, the National University of Singapore (NUS) for decades. Although the assessment template and marking rubrics have evolved through the years, their objectives have remained unchanged: to encourage deep analysis and reflection on the medical and biopsychosocial aspects of a patient's clinical problems, investigations, and management; to promote self-directed learning on knowledge gaps, and to enhance confidence in clinical reasoning and practical approaches. Tutors benefit by gaining greater insight into their student's learning experiences and the effectiveness of their clinical teaching. By providing timely interventions with feedback, tutors promote learning and reflection and contribute to the summative evaluation of the posting. In recent years, tutors are required to provide written feedback to students.

Throughout the years, informal feedback on the value of such written assignments has been sporadically provided by students in their end-of-posting comments, and periodically gathered from teachers at annual get-together discussions. An internal audit was conducted via a formal survey for tutors and students in 2012-13 concerning the learning value and feasibility within a year of launching the latest iteration of these written assignments. Overall sentiments were mixed from both faculty and students regarding its utility and effectiveness as a learning exercise. Therefore, it is time to perform an evaluation to determine if these written assignments should continue as usual or be refined to better reflect the program objectives as well as the requirements of a good clinical assessment.

II. BACKGROUND

Phase three medical students from the Yong Loo Lin School of Medicine in their Medicine rotations in various healthcare institutions are required to submit one outpatient case write-up and two inpatient reflective journals at the sixth to eighth weeks of their 12-week posting. The assessment is standardised as submission needs to follow a format as per assessment template with each component carrying a certain weightage. A marking rubric is also designed to guide the assessor to mark students to make it objective, reliable, and reproducible. The core tutors will mark and provide written feedback on these submissions based on a rubric provided by the school. Face-to-face feedback is encouraged but not mandated. The scores of these written assignments form 30% of the overall posting assessment, and the latter contributes a maximum of 9.4% to the final phase 3 MBBS examination.

Our study was conducted to identify faculty's viewpoint toward these written assignments as an assessment tool and if it is being conducted in a manner where it promotes learning. Constructive feedback was also collected to seek ways to improve this further. A questionnaire, including mostly closed-end questions with recommended suggestions for improvements with some open-ended questions was prepared and disseminated to faculty through administrative support. The results of this questionnaire are discussed in this paper.

III. METHODS

In this study, we prepared a knowledge, attitudes, and practices (KAP) questionnaire for faculty assessing students' assignments. The faculty constituted associate consultants and above in public institutions in Singapore who have tutored the students in Yong Loo Lin School of Medicine in their clinical rotations and have marked their written assessments. There were no inclusion criteria, hence all faculty members who have tutored the students and have marked these assessments were invited to answer this survey. The survey was sent out through administrative assistants in respective departments of public institutions for ease of dissemination and to avoid pressurising the participants. The responses from faculty who have not marked these assessments were not counted towards final analysis. The author aimed to collect constructive feedback from faculty about the current process and suggestions for improvement in this assessment tool. The study was conducted over a period of three months from Sep 2020 to Dec 2020 in Singapore for Yong Loo Lin School of Medicine.

The questionnaire was anonymous, and it included eighteen questions, designed to understand the strengths and limitations of these case write-ups and reflective journals based on the Context, Input, Process, and Product (CIPP) method of program evaluation, developed by Stufflebeam (2002) with the aim of providing suggestions for improvement in current delivery or content. The questions included objectives of these assessments, frequency, process, and standardisation training for marking them. It also included the questions regarding familiarity of faculty with these assessments in terms of numbers of these assessments marked per year, marking rubrics and their expectations from the students. Lastly, there were open ended questions regarding feedback for improving the current process and strengthening these assessments for serving the purpose of assessment of students' learning. An implied consent was obtained from study participants as questionnaire was voluntarily answered. The responses to this survey were collected, collated, and analysed for the understanding of faculty viewpoint and outlook towards these assessments. Feedback was analysed and recommendations were formulated to improve current process of these assessments.

IV. RESULTS

The survey was disseminated to 150 faculty members, and it collected a total of 52 responses (n=52) from two public health clusters over a period of three months with a response rate of 34%. The survey was sent out in September 2020 and monthly reminders were sent till December 2020. The faculty who marked at least one assignment was offered to participate, but there was low response rate, due to lack of inducement or survey fatigue. About 88% (n=46) of respondents had marked 2 to 6 assignments in an academic year while 4% (n=2) had marked more than 10. Ninety percent (90%) (n=47) of faculty think that these written assignments are tools to promote and assess learning. Factors that make them useful were the opportunity for students to choose their cases in outpatient and inpatient settings thus, promoting self-directed learning (29%, n=15) and for assessors to provide feedback and an action plan (30%, n=16). Although when approached by students for a choice of cases, faculty mostly assigned the cases themselves (56%, n=29). The complexity of the selected case (47%, n=24) and common vs uncommon case (30%, n=16) were the principal factors that influenced the marking by assessors. The discussion and reflection sections in these write-ups provided insight into students' understanding of the case that influenced the overall passing scores (12%, n=6). Marking rubric provided to faculty was used only about half of the time (48%, n=25) faculty used the rubric. Of the 48% (n=25) of assessors who used rubrics for marking, most of them found the rubric to be user-friendly (40%, n=10). Although the same write-up

assessment is used to assess learning at distinct phases of the MBBS curriculum (Phase III and Phase IV), 89%, (n=46) of assessors marked it against the expected level of students' training.

While 60% (n=31) of the assessors provided the overall score, feedback, and action plans directly to the students, either in personal meetings or by email or phone, 40% (n=20) handed over the assessment to an educational administrative assistant. Faculty in the survey responded that face-to-face meetings provided "*clearer discussion*" and "*personal engagement with the student*" and were "*faster and more effective,*" yet the organisation such as "*timing of submission mostly at the end of the posting*" or "*busy schedules of both assessors and students*" made it harder to meet students personally. Most of the assessors (69%, n=36) provided action plans which included looking up literature for deeper learning and similar case review for expanding understanding of the patient's presentation. In a few instances, it also involved rewriting of write-ups (11%, n=5). However, these actions were not followed up very actively. Only a few assessors (10%, n=5) made phone calls or emailed the students to follow up.

Faculty feedback was sought about improvement in the current Input and Process of these assessments. 40% (n=20) of faculty think that weightage to the different components of these write-ups should be flexible and adjusted. 53% (n=28) of assessors suggested that analysis of the case with clinical reasoning and differential diagnosis should bear higher weightage than the clinical presentation, management, or student's reflection. The number of submissions (16%, n=8) and timing of submissions during a rotation (22%, n=11) should be made uniform and aligned with the training weeks so that timely and face-to-face feedback can be arranged. In our survey, 40 % (n=20) of faculty's feedback was a written statement to the educational administration. The results of the study are in the data repository and can be accessed by readers if they wish to see detailed responses from faculty in Figshare repository at

https://doi.org/10.6084/m9.figshare.24471661.v1
(Sachdeva & Aw, 2023).

V. DISCUSSION

Clinical rotations are the placements planned by universities for medical students to have real-time patient encounters in public hospitals. This is the continuation of the undergraduate medical education curriculum whereby students learn to apply their medical knowledge acquired in initial foundation years and continue to learn bedside manners, verbal and nonverbal communication,

eye contact, and body language to prepare them for their future roles as doctors.

Assessments during these rotations must include all the areas of learning such as the patient's clinical presentation, diagnostic approach for the patient's symptoms, the analytic ability of students, and communication with the patient and his management. A variety of assessment tools to perform a comprehensive holistic evaluation of a student's performance are undertaken in clinical rotations such as Mini CEX, Case logbooks, student portfolios, and written assignments such as case write-ups and reflective journals. While Mini CEX has gained its popularity over last few decades due to its rapid results, synchronous feedback and direct observation of encounter, other assessments such as case write-ups, reflective journals do contribute to learning and supplements the medical education assessments and have been the part of curriculum.

Assessments such as Mini-CEX (clinical encounter) are assessor-observed case presentations that assess the student's ability to ask history questions and perform a clinical examination to formulate a list of differentials and thus develop a diagnostic approach (Kogan et al., 2002). It also assesses skills such as bedside manners, verbal and nonverbal communication, use of jargon, and speed of speech. There is a provision for giving feedback to the students about their learning and agreeing on an action plan to improve upon the student's learning gaps at the end of the encounter. This assessment does not

provide the opportunity for reflection-on-action and in-depth patient management (Schon, 1984).

Case write-ups on the other hand are akin to a case presentation but the focus is on identifying knowledge gaps by students themselves. Students collect data on patients' clinical presentation and investigations performed that help in formulating a diagnostic plan (McLeod, 1989). They analyse the information to reach a final diagnosis. Students refer to literature for common and uncommon presentations of the patient's condition and learn management based on the evidence. It also provides the opportunity to learn details about a certain medical disease. However, this literature then needs to be individualised for the patient based on his comorbidities and social factors. In the end, students are asked to submit this write-up along with their reflections on their learning from the patient and assessment.

Reflective journals are like case write-ups however, the emphasis is on learning and evolution alongside the clinical encounter. Boyd & Fales (1983) have explained reflective writing as an internal experience that is triggered by an encounter which results in changed perspective. Students are expected to write about the patient encounter, their interpretation about clinical outcome and management and their learning along the encounter as per stages in cycle of reflection (Gibbs, 1998). Mello & Wattret (2021) highlighted reflection as a skill that prepares students for lifelong learning.

Assessment	Mini CEX	Case write-ups and reflective Journals
Directly observed	Yes	No
Case presentation and differentials	Yes	Yes
Access to investigations	Provided by accessor on request	Access is granted
Management plan	Proposed by learner	Assessed and discussed by learner
Reflection-in-action	Yes	No
Reflection-on action	No	Yes
Literature review	No	Yes
Feedback to learners	Yes, communicated directly at end of encounter	Yes, communicated directly or indirectly*
Action Plan	Yes	Yes
Resources required	The patient, learner and accessor must be present at same time (synchronous learning) (Kunin et al., 2014)	The patient, learner and accessor need not be present at same time (asynchronous learning) (Kunin et al., 2014)
Assessment focus	Communication skills, bedside manners, professionalism, case presentation and diagnosis and approach to diagnosis (Kogan et al., 2002)	Clinical reasoning, in depth understanding of disease presentation, Evidence-Based Medicine (EBM) practice and learner's reflection (McLeod, 1989). Reflective journals focus more on learning evolution based on one's experience.
Marking	More objective (valid, reproducible)	More subjective (assessor guided) **
Assessment tool	Formative (Joshi et al., 2017)	Summative (Bussard, 2015)

Table 1. Comparison of Mini CEX and case write-ups as assessment tools

*For direct feedback, assessor needs to have follow up communication with the student.

**it can be made objective with descriptors provided in the, marking template for each domain that is being assessed.

Evidence has shown that case write-ups do provide assessors the ability to understand students' learning and analytical skill (McLeod, 1989) and unlike Mini CEX, it involves reflections by students that deepen learning and memory (Fortson & Sisk, 2007). Similarly, Bjerkvik & Hilli (2019) emphasised that reflective journals promote deeper understanding, critical analysis, metacognition and promotes self-development. Onishi (2008) noted that case presentations during clinical rotations promote the assessor's understanding of student learning which is consistent with our faculty response as most of our faculty (n=47, 90%) agree that case write-ups are important tools to assess learning. However, since these are not observed assessments at the bedside and require submission, there is no face-to-face contact with the student to give instant feedback and discuss action plans, if any. The discussion of feedback and action plan requires separate communication such as a meeting or phone calls or emails between the assessor and student. If appropriate feedback is not provided or communicated, it is a lost opportunity for improvement in students' learning.

Results from our survey have highlighted a few areas that needed the attention in optimal utilisation of these assessments. First is, *the choice of cases,* either by faculty or by students is not uniform. The case selection by students promotes self-directed learning. Presently, students are given a list of cases that may help them select one, but the enlisted cases may not be encountered during their rotation. In such situations, faculty suggesting the choice of cases can provide directions to students. Lee et al. (2010) demonstrated that students who were encouraged to choose their cases based on their knowledge gaps, learning strategies, and study time, were more inclined towards self-directed learning. Self-directed learning has been a cornerstone of adult learning, and it provides learners autonomy and control over their learning and prepares them for lifelong self-management outside educational institutions (Goldman, 2009; Lee et al., 2010). Understandably, students' choice of cases is influenced by the curriculum, tutorials, and objectives of a particular rotation. Case write-ups and Reflective Journals in our context included both inpatient and outpatient encounters hence providing the choice for both acutely sick vs stable chronic patients. Since the students were encouraged to choose their cases for these assessments on their own, it provided them the opportunity to meet their personal goals and learning deficits. However, if asked for guidance, slightly more than half the faculty (56%, n=29) would assign the cases themselves, and of note, such selection of cases, in various forms of frequency and complexity, did affect the marking by faculty by a considerable amount (about 30 to 45%). Nonetheless, the reflective journals involve writing about one's learning evolution about a case from preset knowledge to acquired knowledge after encounter. Hence, both these written assignments, case write-ups and reflective journals on any encounter tend to improve

learning by making students do literature search and individualise this current evidence-based management search in context of the chosen patient. It still serves the purpose of learning, although personal selection of patients encourages students to work on their own interest, at their own pace and promotes deeper understanding tailored to one's own pre-existing gaps or deficiencies in knowledge. The authors think that faculty assigning cases will inadvertently compromise the extent of self-directed learning to a significant degree and adjusting the marking based on the frequency and complexity is a qualitative component that warrants further investigation. We recommend the school generate a simple set of guidelines to help students to make an informed and wise selection of suitable cases for their written assignments. Focus group discussions with tutors who regularly mark students on such assignments may provide useful directions in the guidelines' construction.

Results of this survey also raised the inconsistency in faculty use of marking rubrics. McLeod (1989) raised the major concerns about the variability of criteria and standards of evaluation of these written assessments.

Kogan & Shea (2003) addressed these concerns and assessed the evaluation of write-ups against a pre-set evaluation form that increased the validity and reliability of scoring these write ups. Peggy (2014) also highlighted the use of standardised scoring rubric for case write-ups to reduce the interrater variability and improve the reliability of these assessments. Hence, the scoring rubrics must have descriptors for faculty to mark the students against their performances and it not only makes the assessment fair, but also contributes to individualised and appropriate feedback for students for further improvement in respective domains (Cyr et al., 2014; Kogan & Shea, 2005). Thus, the author recommends that universities or schools must emphasise on faculty training and thereby its use in marking these assignments.

This also brought about the feedback, provided by faculty in this survey about components of this rubric. Reflective journals and case reports assess similar yet different components of learning. While case reports accounts more for critical analysis, clinical judgement, evidence-based management for a particular patient, the reflective journals assess the student's ability to assimilate an encounter with new acquired knowledge and reflect on their individual learning and growth (Sandars, 2009). Hence, rubric should be tailored to these assessments' subcomponents accordingly. A small fraction of faculty (12%, n=6) in our survey responded that the discussion and analysis of information by students influenced their marking of the write-up as it provided them invaluable insight into students' clinical reasoning. In line with this, half of the faculty (53%, n=27) recommended that analytic skills be ranked higher in weightage as compared to data collection on patient history and examination. Hence, marking rubric should emphasise more on clinical judgement and critical analysis in case write-ups than components such as history taking and examination as latter can be assessed in detail with other assessments such as Mini CEX or OSCE examinations. At the same time, complexity of the case and atypical presentation must also account for separate marks to encourage students for choosing challenging and difficult cases. Similarly, for reflective journals rubrics must have weightage on self-reflection cycle, changes in attitudes and perception and how the encounters have changed one's learning and future practice. The role of rubric in standardisation of these written assessments is paramount as former provides a structure of written submissions for students and reliable and valid scoring tool for faculty.

Results of our survey also highlighted pertinent inadequacy in these assessments that is inability to provide the face-to-face feedback to the students in timely fashion, contributed by timing of submissions of these assessments towards the end of rotation. There is ample literature to support that feedback is a backbone of any formative assessment (Clynes & Raftery, 2008; Nicol & Macfarlane-Dick, 2006) as it promotes self-regulation of training and highlights the discrepancies in the trainee's current vs expected learning outcome. Hence like every other assessment, the templates of case write-ups are imbued with spaces for feedback and action plans which the majority of faculty (60%, n=31) have personally communicated to the students. Face-to-face feedback has a higher impact on performance improvement than written indirectly communicated or no feedback as the former provides two-way engagement, however, this impact depends upon the supervisor's training and content & organisation of feedback (Johnson et al., 2020; Pelgrim et al., 2012). The final stage of providing any feedback as per Pendleton's rule (Pendleton, 1984). Pendleton's rule is an agreement between the learner and assessor for a joint action plan for improvement. Presently, there is no timeline for students to submit these written assignments to their core supervisor, hence if these are submitted towards the end of the rotation, the opportunity for face-to-face feedback and discussion on action plans is underutilised. Hence, it would be worthwhile to align the submission with weeks of rotation so that timely and personal feedback can be provided and agreed action plans can be followed within the rotation.

This study highlighted that though an action plan was agreed upon, it was not actively followed up with students 90% (n=47) of the time – as such, the accountability of this assessment is reduced. The most common reason for the inability to follow up on action plans was coordination (having to schedule a meeting between the assessor and student when the student may have moved on to the next rotation). This can be modified if students are instructed to submit their assignments at least one or two weeks before the end of posting to allow ample time for both parties to schedule a meet-up. Alternatively, there could be an end-of-posting mandatory meet-up with the clinical supervisor to provide overall feedback for rotation and to discuss action plans. Additionally, the school could also mandate a follow-up meeting, over an interactive online platform if a face-to-face meeting is not feasible, for a supervisor to review the outcomes of the actions undertaken by the student. The school may even consider recruiting student mentors to follow up instead.

Overall, this survey has provided useful insight into these assessments' conduct and has highlighted the factors that limit the utility of these written assessments. With the faculty agreeing that these assessments are still worthy educational and learning assessment tools, there is a need to improve marking standardisation of these assessments and like other assessments, formative feedback to students on gaps in knowledge must be provided. These assessments have been part of curriculum for decades and their role in students learning must be utilised to its full potential.

There are limitations in our study such as lower number of respondents and qualitative feedback. As survey is voluntary and anonymous, it is limited in its research capability for recommendations and qualitative feedback as latter is respondent dependent. Hence, further qualitative research such as focussed group discussions is required to understand the ways, these assessments can be utilised to their full potential as learning and assessment tools.

VI. CONCLUSION

In conclusion, written assignments are still worthy and useful tools to assess the learning of students during clinical rotations. It promotes self-directed learning by allowing students to select their case and provides the opportunity for the assessor to assess the knowledge gaps of students about case management. Since the case choice affects the marking by the assessor, authors recommend that students are given free reign, within a set of recommended guidelines.

Marking and scoring should be adjusted to include variables such as case selection and complexity in the marking rubric provided to the assessors, hence authors also recommend updating marking rubrics in consultation with faculty, with subsequent faculty development for compulsory use of this rubric.

For these assessments to be more effective, structured, timely and direct feedback should be given to students with action plans that must be followed. The hurdles in following up on action plans such as change of rotations can be dealt with by adjusting the timing of submission of these assessments during a posting and creating opportunities for follow-up. Hence, authors also recommend face-to-face feedback by ensuring adequate timing of assessments and appropriate follow up for action plans to maximise educational improvement opportunities.

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