Reflection and Reflective Practice in General Practice: *A systematic Review Exploring and Evaluating Key variables Influencing Reflective Practice .*

Abstract

***Background**: Reflective practice is an essential part of general practice involving the trainee and the practitioners and the mechanism to promote this is the creation of portfolios to monitor evidence of reflective practices needed as part of licencing and revalidation in United Kingdom*

***Aim**: Evaluate the existing evidence about reflection and reflective practice models, utility, quality, significance and implication for practice in General practice.*

***Method**:. Systematic databases search include Medline/PubMed, Embase, Cochrane CENTRAL, and ERIC and google scholar, limited to the last twenty years from January 2000 to January 2020.*

***Results**: There were eight observational studies with 236 patients with over 90 percent of evidence that reflective practice is a tool for learning and development with poor evidence on scale of measurement of reflective practice . No evidence for effect of reflection on patient care. All evidence are level 2- with grade C recommendation.*

***Conclusion**:. This systematic review of findings from eight studies of reflective practice in general practice. Relevant literature support refection as a learning tool and process for mandatory assessment of performance and appraisal. In contrast there is an overwhelming distaste for current structure of e-portfolio for written reflection. There is no evidence for*

effect of reflection on patient care and currently no standard scale of measurement to assess reflection in general practice.

***Key words**: reflect, reflection, reflective practice, portfolio, general practice, primary care, general practice trainee, general practitioners.*

Background

Reflective practitioner concept was first introduced in 1983 by Schon 1983 [1]. The essential qualities of competent and well trained healthcare professional like general practitioner is reflection and reflective practices as enumerated in medical education literature [2,3,4, 5]. Reflection and reflective practice are mandatory for revalidation by General medical councils [6]. The development of all the GP core capabilities is underpinned by reflection and reflective practice ability[7]. Reflection can be described as a purposeful and critical analysis of knowledge and experience for the production of deeper knowledge meant to gain adequate understanding and for future intervention [4].

Reflection in general practice can be a key of tailoring professional functioning of patients' needs or new conditions in the absence of obvious solution to formation of new knowledge and practice as a drive to life long and professional learning and development and ultimately producing valuable insight to address patient needs in particular and community needs in general.. Personal reflection is a validated means of obtaining and maintaining balanced professionalism along the continuum of medical education [8,9].

Literature is replete with numerous forms of reflection and reflective practices including mindful practice[10], emotional awareness[11], learning from experience [12], critical learning[13], assumption [14], morality [15] and deep learning[16].

Reflective practice is an essential part of general practice involving the trainee and the practitioners and the mechanism to promote this is the creation of portfolios to monitor evidence of reflective practices needed as part of licencing and revalidation in United Kingdom[17]. Trainees in General practice in UK. However the evidence to support and inform interventions and innovations in reflective practices remains majorly theoretical [18]. The use of reflective practice and reflective learning using electronic portfolio is seen largely as educational tool for training and professional development, there is little evidence that portray that reflection improves quality of care[19]. General practice trainees (GPST) engage in a lot of written reflection as a significant part of workplace based assessment however, written reflection has come under intense criticism as sometimes being done hurriedly, superficial in quality and quantity, limited by time constraints hence making e-portfolio in its present form may not be the most appropriate tool for enhancing reflective writing for reflective practice [20]

Personal reflection in General practice is synonymous to appraisal and inspection of their experience and practice for the benefit learning and development. Reflection is relevant in understanding further patient care or circumstances especially when there are now obvious, immediate or inadequate solution when GP has had regular contact with same patients for

Nguyen et al , 2014[21] define reflection as "*the process of engaging the self in attentive, critical, exploratory and iterative interactions with one's thoughts and actions, and their underlying conceptual frame, with a view to changing them and with a view on the change itself".*

Reflective practice is 'the process whereby an individual thinks analytically about anything relating to their professional practice with the intention of gaining insight and using the

lessons learned to maintain good practice or make improvements where possible'.(COPMED 2018[22]

Gibbs [23] is one of the early proponent of reflective practice who developed the reflective cycle which included six stages of how children learn through first hand experiences, or 'learning through doing'. He described reflective cycle as a circular process by which our thoughts effect our actions, which effects the situation we are dealing with and therefore after feedback through the reactions of others involved which can affect how we understand and think about the situation. Gibbs method has been modified further in General practice training as useful tool for reflective practice.

There are different ways to reflect and to document those reflections. The GMC does not require any specific documentation, only evidence that it is being carried out effectively. Documentation of reflection can involve writing personal notes in CPD and appraisal portfolios or in training portfolios, or, if reflection is undertaken as part of a dialogue with trainers, this can be recorded as a workplace-based assessment/supervised learning encounter. A written record of reflection may be made at any time. All details of those involved in a reflective event – patients, colleagues, relatives etc – must be fully anonymised to comply with confidentiality and information governance requirements. Similarly, precise locations, dates and times should not be specified, and separating the timing of the reflective documentation of an event and its actual occurrence may help to achieve this.(COPMED 2018, tool kit for reflective practice[22].

Reflection and reflective practice is an integral part of maintaining and enhancing competence in professionalism which need to be developed throughout training and beyond. The effectiveness is evidenced in the RCGP portfolio with trainer and supervisor apparatus for feedback[24]. This has become a tool for accountability, monitoring and appraisal of

training and practice. It is essential to evaluate how effective current practice and training and CPD development can encourage robust reflection and reflective practice. However effective and result-oriented reflective practice is very difficult in the final year of GP vocational because majority of time spent in preparing for MRCGP exam.

The aim of this research study is to evaluate the existing evidence about reflection and reflective practice models, utility, quality and significance in General practice.

Methodology

Systematic databases search include Medline/PubMed, Embase, Cochrane CENTRAL, and ERIC and google scholar, limited to the last twenty years from January 2010 to January 2020. Keywords were mapped to Medline Medical Subject Heading (MESH) as well as search for text items, A filter for identification of research limited to general practice was used to filter out irrelevant studies. Furthermore hand searches of references of cited journals were conducted to also identify potentially eligible studies .Search terms include: reflect, reflection, reflective practice, portfolio, general practice, primary care, general practice trainee, general practitioners. Inclusion criteria are articles on refection and reflective practice in General Practice, limited to last 20 years , publication In English. Exclusion criteria are research studies that did not describe reflection or reflective practices in General Practice, letter to Journal, commentaries and conference proceedings.

Included Studies

Study	Methods	Sample size	Country
Curtis 2016 [25]	Qualitative Focus group study	25	UK
George 2013 [26]	Qualitative Mixed evaluation	25	UK
Pelgrim 2012 [27]	Qualitative Task evaluation study	54	Netherlands
Bethune 2007[28]	Qualitative In-depth Interview	8	Canada
Mamede 2005 [29]	Questionnaire	202	Brazil
Mamede 2004 [30]	Observation, cross session	202	Brazil
Pearson 2004 [31]	Observation cross session	92	UK
Mathias 2002 [32]	Qualitative Semi structured	32	UK

Table 1: Included studies

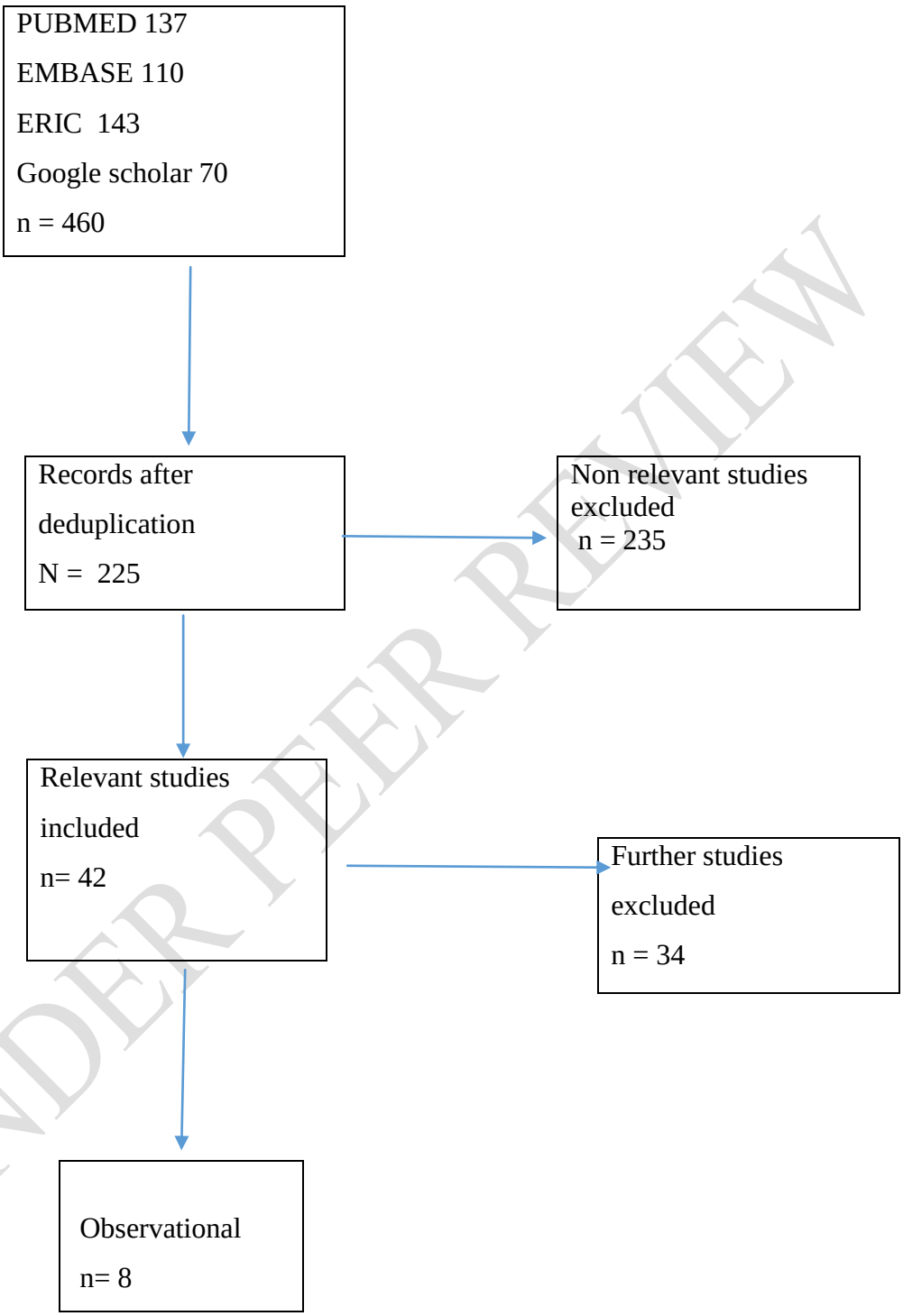

Figure 1: Search flow

Result

Relevant questions and significant issues following the results of this review are structured to reflect the summaries of relevant studies in relation to General Practice and General Practitioners however, more than one questions may be addressed by several studies as shown in figure 1 and Table 1.

Role of reflection and reflective practice in General Practice

Reflection and reflective practice form essential framework that serves as a bridge between knowledge obtained from studies and practice displayed in work place hence this enables General practitioners to inculcate new knowledge and experience within cognitive framework for optimum safe and sound outcome. Studies that looked at the role of reflection in enhancing residents' learning found that graduates who received instruction in reflection continued to engage in reflective practice after training leading to personal growth overtime as a result of experience and new understanding. This is in keeping with Schön's reflective practice model [33] and Moon's concept that reflection is the path from superficial to deep learning[33]. All the eight studies explored agreed that reflection and reflective practice is majorly a tool for learning and development in general or family practice.

Bethune & Brown (2007) conducted a qualitative study using in-depth interview exploring Family Practice resident experience of reflective practice with the use a semi-structured case-based reflection exercise as a learning medium. These were graduate of Family Practice residency programme in active practice, eight interviews were conducted over two years that included 5 women and 3 men. Three major role of reflective practice was evident in this research which are still relevant as strategies for GPs to incorporate new knowledge and understanding into professional reflection and reflective practice. According to Bethune and Brown (2007), the reflection exercises as a continuing education process offered participants a strategy for future learning in practice secondly the exercises offered a different perspective

on the patient-doctor interaction that had doctors looking for cues to deeper meaning; and thirdly the exercises engaged the learners in a reflective process that revealed qualities about themselves that gave them personal insight. The participants feedback were entirely positive, they see reflection as a great tool for self-directed teaching and learning that will produce deeper introspection to explore answers to clinical tasks or challenges, also the exercise appeared to have significant impact on the interaction between the participant and their patients especially as they explore "depth of field" in consultation searching for clues to unlock the communication, this enhanced their ability to listen and also value their professional work. In addition the participants agreed that this exercise has produced growing confidence in their skills as family physicians and also foster better relation with their patients leading to effective continuity of care. Hence case-based discussion incorporating reflection is strategic part of the GPST as evidenced in the e-portfolio of workplace based assessment.

George et al [26] explore the role of reflection skills as self-directed learning skills to facilitate physician's life-long learning. The study was conducted from 2008–2010 at the Brown Family Medicine Residency in Pawtucket, Rhode Island. During individual monthly meetings with the learning coach or mentor or trainer, residents entered their learning goals and reflections into an electronic portfolio. A mixed-methods evaluation, including coach's ratings of goal setting (termed as professional development plan in General practice in UK) and reflection, coach's meeting notes, portfolio entries, and resident interviews, was used to assess progress in residents' SDL abilities.

Curtis et al [25] carried out a focus group study on what do General practitioner think of written reflection, General practitioners in training (GPST) were also included including 25 participants in total, and some GP and GPST find written reflection useful describing is as a tool for assessment of learning and also for appraisal. However there were only three focus

groups characterised with divergent and complimentary views on written reflection. In the same vein Pelgrim et al [27] explored the quality of written narrative feedback and reflection in a modified mini-clinical evaluation exercise analysing 485 completed modified mini-CEX completed by 54 GP trainees and their trainers where all seen reflection as a tool for assessment of learning and appraisal however, self-reflection by trainees and action plan formulation were not reported uniformly on the assessment forms.

Mamede et al[30] conducted questionnaire based study on the structure of reflective practice in Medicine where they sampled opinions of 202 primary care doctors, this study revealed the assumption that primary care doctors who reflects regularly on their professional work and learn from their practice may serve their patients better on the long run than those who do not, hence they see reflection as a tool for improve professional practice.

Mathers et al [32] performed a quantitative study on thirty-two GPs divided into two cohorts and observed for over six months to examine the comparison between traditional continue medical education (CME) and portfolio-based learning integrating use of reflection learning among general practitioners. This study demonstrates that written reflection using portfolio based learning is tool for more focused , targeted and monitored learning with effectiveness and achieving of goals more for the portfolio cohort compared to the traditional CME. In addition Pelgrim et al [27] following completed 485 forms by 54 General practice specialty trainees (GPST) using written reflection model, the study further demonstrates written reflection as a tool for focused learning among trainees with regards to specific task guided by feedback from GP trainers or educational supervisor of named GP trainee.

In the same vein other studies by George et al , Pearson et al , Mamede et al [26, 30,29] see reflection and reflective practice as a tool for learning and development.

Effectiveness of reflective practice in General Practice

Reflective practice in the UK is an obligatory aspect of learning, assessment and appraisal for GPST and GP particularly in the form written reflection aimed to demonstrate progressive learning. How effective is compulsory written reflective practice? Three studies explored the effectiveness of reflective in General practice. Curtis et al [25] examined total of 25 GPs and GPSTs in a focus group study and reported that though seen as a useful learning process, it's mainly to provide evidence for learning and is a task or tick-box exercise to be performed but another focus group see written reflection as a tool to demonstrate progressive learning and changes in their practice.

Pearson et a[24] conducted a survey of GP registrars on Portfolio use in general practice vocational training exploring the views of 77 GP registrars with use of postal questionnaires and structured in-depth research. Experienced registrar were found to least interact with portfolio as a tool for reflective practice, information recorded daily by 65 percent and portfolio was used in reflective learning by less than half (42 percent) and most essentially those with supportive and encouraging trainers and educational supervisors consistently engaged the portfolio more in reflective practice. Hence trainer and educational supervisor role will a long way to positively or negatively impart portfolio-based learning which raises a question of acceptability of portfolio reflection by trainers or educational supervisor. Many of the respondent see portfolio reflection as useful while others see it as a tool to fulfil educational need.

Mathias et al 2002 [32] conducted a qualitative study on "portfolios in continuing medical education – effective and efficient?" This study involves thirty-two GP divided into two cohorts who made submission of portfolio reflection entries for six months findings revealed that all the participants agreed portfolio based reflection afford them the opportunity to

achieve their pre-specified learning objectives and also allow for great flexibility in learning methods and time management with regards to educational activities which is seen as a beneficial effect in diversification of learning. The findings showed that GP preparing for the portfolio based learning spent mean hours of about 24.5 ± 12 (SD) which was significantly more than the 15 hours of post graduate educational allowance (PGEA) awarded. At a time in the past PGEA was seen as a revolution that change face of continued medical education by use of inducement means to stimulate GPs to accumulate CPD credits towards their specified allowance.

However the amount of paperwork involve and time to regularly maintained portfolio reflection made it burdensome and less attractive. The role of mentors was also seen an effective terms in encouraging consistent reflection.

Assessment of reflection and reflective practices

Assessing reflection and reflective practices in general practice has led to improved learning of trainees and trainer and those involve in appraisal for revalidation learned tools for analysing problems solving and clinical decision process of trainee GP but the question is how valid and reliable is this method of assessment. Grading of reflective practice especially in GPST workplace based activities which is a significant part leading to the award of MRCGP qualification just like the applied knowledge test (AKT) and CSA (clinical skill assessment) has been a challenge leading to subjectivity on the feedback assessment by GP trainers and educational supervisors because there is no valid and reliable measuring scale for reflective activities. Three studies made an attempt to explore assessment but Mamede et al 2009 try to based their assessment on a reflective structure which made need further research to explore the generalisability of this.

Curtis et al [25] performed an online survey of about 1005 GPs and GPST on their views about written reflection in assessment and appraisal Three quarters disagreed that written reflection is a way of identifying poorly performing GPs. More 70% of respondents stated that summative, written reflection is a time-consuming, box-ticking exercise which can lead to distraction from other learning. It validity as a part of assessment was questioned and they believed that its use may contribute to difficulties with General Practitioner recruitment and retention.

Mamede & Schmidt [30] in their study of the structure of reflective practice in medicine involving 202 primary care doctors identified constituent elements of multidimensional reflective practice which are generally considered essential for development of expertise which can be maintained throughout professional life. They identified multidimensional five factors of reflective practice by the use of 87-item questionnaire of which 65 were related to reflective practice. The five-factor model of reflective practice and their reliability were deliberate induction ($\alpha = 0.83$), deliberate deduction ($\alpha = 0.81$), testing and synthesizing ($\alpha = 0.79$), openness for reflection ($\alpha = 0.86$) and meta-reasoning ($\alpha = 0.68$). The implication of this finding is that it is possible to measure, among doctors, differences in approach to difficult medical problems. Some doctors have more tendencies to approach these medical problems in a reflective manner whereas other may do this less routinely. The second implication is that reflection or reflective practice is not an abstract process, it can be taught, developed and assessed at different level.

Currently in the GPST there is no standardised, valid or reliable scale of measurement and assessment of personal reflective entry by clinical or educational supervisor which has led to increase objectivity in feedbacks which has positively and negatively impacts trainee progress. Pelgrim et al [27] assessed the quality of written feedback and reflection of 54 trainee GP with no definite scale of measurement of the written reflection. The findings

showed that feedbacks comment after assessment of quality of reflection were specific, substantial and different in consistency between trainer-trainee pair.

Outcome of effective reflection and reflective practices

How effective is reflective practice currently in General practice? There has been huge criticism of written reflection as sometimes being superficial, hurriedly prepared, limited by time constraint especially with use of e-portfolio which has been suggested that in its current form may not be most appropriate way of stimulating and encouraging written reflection [20].

Mathias et al[32] showed that GP that engaged in portfolio based learning with use of reflection tool can meet their professional needs , encouraged active and peer-supported learning thereby increasing their personal and professional confidence in comparison to PGEA cohort.

Relationship between reflective practice and clinical experience

Reflection on practice and learning from experience are considered invaluable ingredients to acquire and maintain expertise in medical practice (Guest et al., 2001). One study established relationship between reflective practice and clinical experience .

Mamede et al [29]conducted a qualitative study on correlate of reflective practice in Medicine , this was carried out with use of self-admistered questionnaires to 202 primary care physicians working in primary care in major cities of the Brazilian state of Ciera´ who had on average almost 17 years of practice (SD = 10.45). The average number of patients seen each week was 148.31 (SD = 91.46) and the average amount of time spent on each patient was 14 minutes. The mean of reflective practice scores for the physicians with less than 8 years of practice was 3.13 (SD = 1.10) and in comparison to those practising for more than 24 years, It decreased to 2.75 (SD = 0.67) , this shows that reflective practice is

negatively related to Primary care physician age and number of years practice , reflective practice tend to decrease with experience. Furthermore this study showed that primary care physician whose first workplace was hospital setting engaged in reflective practice more than those in primary care setting and also who had specialty based training or posting in Internal Medicine, paediatrics and Public health engage in reflective practice more extensively than Gynaecology and Obstetrics counterpart in primary care. Regular continued professional development is required to reverse this trend. However human memory research revealed a general agreement that performance losses are age-related, but that the losses do not occur in all memory tasks [35,36].

Effect of reflection and reflective practices in patient's care

Reflective practice has been seen as significant tool for developing clinical skills and improving clinical judgement which ultimately impact on patient's outcome positively or negatively but currently in evidence in General practice to prove this. Quality and safety are two paramount pillars of patient outcome, newly qualified GPs can struggle to integrate this in their practice at the start but reflective practice be a bridge to connect quality and safety to patient's outcome. There is no single study in this review that showed effect of reflective practice on patient care but can be theoretically explained that reflective practice that can translate into better patient care outcome . This is a call for further research to explore this research condition.

Barriers to Effective reflective practices

Identifying barriers of effective reflective practices are relevant to progress in effective reflection , two studies identify few barriers in this review.

Mamede and Schmidt [29] identified two correlates of reflective practice by primary care doctors including decline of reflection with increasing years of practice and secondly

reflection was lower in primary care setting as compared to hospital care setting due to time pressure in a busy clinical environment synonymous to most GP surgeries today with increasing number of patients to see.

Pearson and Heywood [24] studied portfolio-based learning with use of written reflection, many GP and GPST found the portfolio not useful especially in the absence of supportive and encouraging trainers and educational supervisor. The development of reflection in current training structure of General practice in UK is not encouraging reflective practice especially in the final year of the GPST where you have GP registrars (potential GPs) focus more on AKT and MRCGP exam preparation with less time and opportunity to reflect and develop reflective practice.

Discussion

Reflection and reflective practice may serves a viable tool and learning strategy that may allow general practitioners and GP trainees to connect effectively with new learning, pre-existing experience and skills with possible future possibilities in clinical environment. Collaborative and personal reflection is essential in multidisciplinary team where underlying cognitive approaches and values of other co-professionals[37]. Reflection with objective feedback is a good way to explore ones are of weakness and strength which ultimately will lead to improved practices. Having analysed over 35 research studies included in this systematic review largely observational studies with non-robust methodology lacking in terms of sample size and rigour, undefined comparison group and most essential no randomised studies on this subject till date. However this literature review led to identification of certain benchmark in reflective practice that can form core foundation and direction for future research in this field and also findings revealed in this research will be

food for thought for developing subsequent curriculum for postgraduate specialty training in General practice and re-designing of electronic portfolio for written reflection.

Reflection is a core ingredient and life wire of effective and enduring general practice triggered majorly by complex and challenging clinical scenarios with varied perception in terms of experience and context of practice. The ability for effective reflective practice is developed over time dependent of the amount of knowledge and the clinical environment the practitioners are.

In the light of our finding, reflection models used in general practice is founded on the work of Donald Schon and John Dewey, Schon maintained that reflection was stimulated when practitioners are often confronted with situation of uncertainty, instability, uniqueness and value conflict [1] this is interpreted in general practice as complex medical scenarios that will produce "knowing in action and reflection in action". While becoming a reflective practitioner in general practice is a worthwhile disposition to imbibe and developed but the strength of reflective practice ought to be explored beyond the confines of Dewey and Schon's model. According to established models of reflection, personal growth is a process that occur over time as new understanding are produced by experiences that will inform and instruct new practice which is termed horizontal reflection while vertical reflection can progress from superficial reflection to deeper reflection stimulated by critical synthesis

However the entire General Practice reflective mechanism is based on Gibbs model [23]who developed the reflective cycle which included six stages of how children learn through first hand experiences, or 'learning through doing' and afford opportunity for feedback with the use of portfolio for written reflection.

Study by Mamede and Schmidt [30] showed a negative correlation between reflection and years of practice, increasing years of practice lead to less reflective practice, possibly due to

robust experience in practice that apparently reduces encounter with complex problems for which reflection is a strategy of intervention.

More recent models of reflection has identified the need for reflexivity which according to Fook [38] is defined as "a stance of being able to locate oneself in the picture, to appreciate how one's own self influences [actions]. Reflexivity is potentially more complex than being reflective, in that the potential for understanding the myriad ways in which one's own presence and perspective influence the knowledge and actions which are created is potentially more problematic than the simple searching for implicit theory". In general practice the difference between reflection and reflexivity is very blurred because its very difficult to reflect on a case or task without some element of reflexivity.

Several studies so far defined the role of reflection in general practice as tool for continuous or lifelong learning to improve further practice which is the ultimate goal of reflection, however it can also be used as a tool for professional competence[33]) and to demonstrate ongoing learning as a mandatory part of licencing and revalidation in UK[17]. The compulsory nature of role of reflection has led to it being a tick-box exercise and rituals that GP and GPST want to quickly do away, this impact on the quality of reflection and also GP feel limited from being open and honest about their reflection[25].

Bethune and Brown [28] demonstrated in their study that written reflection informed their strategies for future learning and influenced patient interactions. This is another role of reflection as a strategy for future learning and tool to enhance patient interaction.

Effectiveness of written reflection was demonstrated by evidence which borders on adverse impact on other learning opportunity with regards to time spend in reflection especially by large majority of GPST because it is mandatory for qualification, this has led to variety of feeling including anger, resentment and frustration about the reflection process [25]. Hence

the validity of mandatory written reflection as a tool for assessment of performance by GPST is questionable due to overwhelming distaste and lack of support of current process of reflection[25].

GP trainee will reflect more if they are encouraged by their educational supervisors and trainer (Pearson et al) .But sometime those with negative feedback may find it hard to reflect more often.

Currently in General practice there is no validated and standardised tool or measuring scale to assess written or verbal reflection so the tendency for subjectivity is very high hence it may not be a true picture of trainees or GP performance. The written reflection portfolio is assess by educational supervisor or trainer for GPST whose feedback can vary significantly due to different level of experience or year of practice, achieving fair assessment will be difficulty.

There was no evidence on the effect of reflection on patient care, this will require evidence to compare reflective and non-reflective practitioners and possibly a randomised control trial will suffice.

Implication for Practice

Reflection is a skill to be learned and a standardised framework to guide and monitor progress will be helpful, current electronic portfolio for GPST lack great support as a tool for reflection.

Reflection should be seen more as a tool for leaning to bridge the gap between knowledge and practice, not just as an obligatory tick-box ritual to for assessment of performance and appraisal.

Ample evidence suggests that people are more likely to reflect if they are well supported and encouraged by their Educational supervisor or trainer, negative feedback should be

constructive and well situated not to dissuade trainees from reflective practice. In addition the practice environment must encourage a culture of reflective practice as proponent and champions of reflective practice.

Limitation of Study

This review is limited by small number of original studies, small sample size, lack of comparison groups, no randomised studies, and lack of standardised tool to assess reflection and reflective practice.

Conclusion

Reflection and reflective practice can be seen as a tool and strategy to enhance and maintained learning, empathy, and professionalism in GP and GPST. This systematic review of findings from eight studies of reflective practice in general practice. Relevant literature support refection as a learning tool and process for mandatory assessment of performance and appraisal. In contrast there is an overwhelming distaste for current structure of e-portfolio for written reflection. There is no evidence for effect of reflection on patient care and currently no standard scale of measurement to assess reflection in general practice. This is a call for further studies to explore potentials of reflective practice to improve quality of care and safety of our patient which is the ultimate goal of healthcare delivery.

Recommendation

Despite strict inclusion and exclusion criteria of reflection and reflective practice in general practice over 95 % of all the evidence available were in support of reflection and reflective practice as a significant tool for learning and development no robust evidence on scale of measurement and assessment of reflective practice and currently no evidence on the effect of

reflective practice on safety and quality outcome of patient care. All the available evidence in this review were from observational studies with small sample size. In summary all evidence are level 2- , grade C recommendation[39] , not valid enough to change practice or influence trainee policy. Further randomised controlled study needed for valid and reliable evidence meet for generalisation.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

References

1. Schon D . The reflective Partner. San Francisco. Jossey-Bass, 1983
2. Argyris, C., & Schon, D. *Theory into practice: Increasing professional effectiveness*. San Francisco: Jossey Bass, 1974.
3. Moon, J. *A handbook of reflective and experiential learning*. London: Routledge, 1999
4. Boud, D., Keogh, R., & Walker, D. Reflection: Turning experience into learning. London: Kogan Page, 1985
5. Epstein, R., & Hundert, E. (2002). Defining and assessing professional competence. JAMA, 2002; 287:226–235.
6. General Medical Council. (2005). Licensing and revalidation factsheet, 2005. Retrieved June 2, 2020, from General Medical Council Web site: http://www.gmc-uk.org/doctors/licensing/archive/factsheet_2005_08.asp.

7. Royal College of General Practitioners. (2015). The RCGP curriculum: core curriculum statement 1.00: being a general practitioner: 2015, version 18.
8. General Medical Council. The Doctor as Teacher. General Medical Council, London 1999 .
9. Simpson JG, Furnace J, Crosby J, Cumming AD. The Scottish doctor - learning outcomes for the medical undergraduate in Scotland: A foundation for competent and reflective practitioners. Med Teach 2002; 24: 136–143.
10. Epstein RM . Mindful practice. JAMA1999; 282: 833–839.
11. Boud D, Walker D . Barriers to reflection on experience. Using Experience for Learning, D Boud, R Cohen, D Walker. Open University Press, Bristol , 1993
12. Schön DA . Educating the Reflective Practitioner. San Francisco, Jossey-Bass,1987.
13. Mezirow, J. Transformative dimensions of adult learning. San Francisco: Jossey Bass, 1991
14. Van Manen M. Beyond assumptions: Shifting the limits of action research. Theory into Practice 1990; 29: 152–156.
15. Kohlberg L . The Psychology of Moral Development: The Nature and Validation of Moral Stages. San Francisco, Harper & Row , 1984.
16. Marton F, Hounsell D, Entwistle N . The Experience of Learning. Scottish Academic Press, Edinburgh, 1984.
17. General Medical Council. The Doctor as Teacher. General Medical Council, London 1999
18. General Medical Council. (2005). Licensing and revalidation factsheet. Retrieved June 05, 2020, from General Medical Council Web site: http://www.gmc-uk.org/doctors/licensing/archive/factsheet_2005_08.asp.

19. Sandars J (2009). The use of reflection in medical education: AMEE Guide No 44. Med. Teach 31:685-695.
20. Brown JM, McNeill H, Shaw NJ (2013). Triggers for reflection: exploring the act of written reflection and the hidden art of reflective practice in postgraduate medicine. Reflective Practice 755-765.
21. Nguyen, QD, Fernandez N, Karsenti, T, Charlin, B. What is reflection? A conceptual analysis of major definitions and a proposal of a five-component model. Med. Educ. 2014, 48, 1176–1189.
22. COPEMED .The reflective practitioner guidance for doctors and medical students 2018, from COPMED website : https://www.copmed.org.uk/images/docs/reflective_practice/The_reflective_practitioner_guidance.pdf.
23. Gibbs G. Learning By Doing. A Guide To Teaching And Learning Methods.. Oxford: Oxford Brookes Further Education Unit. 1988
24. Pearson DJ, Heywood P. (2004). Portfolio use in general practice vocational training: a survey of GP registrars. Med Educ. 38(1):87-95.
25. Curtis P, Gorolay S, Curtis A, Harris M. What do general practitioners think of written reflection? A focus group study. Educ Prim Care. 2016;27(4):292–298.
26. George P, Reis S, Dobson M, et al(2013). Using a learning coach to develop family medicine residents' goal-setting and reflection skills. J Grad Med Educ. 5(2):289–293.
27. Pelgrim, E.A., Kramer, A.W., Mokkink, H.G. et al (2012) . Quality of written narrative feedback and reflection in a modified mini-clinical evaluation exercise: an observational study. BMC Med Educ2012; 12 : 97 .
28. Bethune C, Brown JB. Residents' use of case-based reflection exercises. Can Fam Physician. 2007;53(3):470–476.

29. Mamede, S., Schmidt, H.G . Correlates of Reflective Practice in Medicine. Adv Health Sci Educ Theory Pract 2005;10, 327–337.

30. Mamede S, Schmidt HG . The structure of reflective practice in medicine. Med Educ. 2004;38(12):1302- 1308.

31. Pearson D, Heywood P. Portfolio use in general practice vocational training: a survey of GP registrars. Med Educ. 2004;38(1):87–95.

32. Mathers NJ, Challis M, Howe AC, Field NJ. Portfolios in continuing medical education – effective and efficient? Medical Education 1999; 33: 521–30.

33. Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: a systematic review. Adv Health Sci Educ Theory Pract. 2009;14(4):595–621.

34. Guest, C.B., Regehr, G. & Tiberius, R.G. The lifelong challenge of expertise. Medical Education 2001;35: 78–81.

35. Craik FIM, Jennings JM. Human memory. In Craik FIM, Salthouse TA (eds) . The Handbook of Aging and Cognition. Hillsdale, NJ: Erlbaum.. 1992.

36. Tulving E, Craik FIM (eds) (2000). The Oxford Handbook of Memory. New York: Oxford University Press.

37. Clark, P. What would a theory of interprofessional education look like? Some suggestions for developing a theoretical framework for teamwork training. Journal of Interprofessional Care, 2006; 20:577–589.

38. Fook, J. (2002) Social Work: Critical Theory and Practice. London: Sage.

39. Harbour R., Miller J. A new system for grading recommendations in evidence based guidelines. BMJ. 2001;323:334–336.