A modified Delphi approach to nurturing professionalism in postgraduate medical education in Singapore

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Abstract

Introduction: Nurturing professional identities instils behavioural standards of physicians, and this in turn facilitates consistent professional attitudes, practice and patient care. Identities are socioculturally constructed efforts; therefore, we must account for the social, cultural and local healthcare factors that shape physicians’ roles, responsibilities and expectations. This study aimed to forward a programme to nurture professionalism among physicians in Singapore.

Methods: A three-phase, evidenced-based approach was used. First, a systematic scoping review (SSR) was conducted to identify professionalism elements. Second, a questionnaire was created based on the findings of the SSR. Third, a modified Delphi approach, which involved local experts to identify socioculturally appropriate elements to nurture professionalism, was used.

Results: A total of 124 articles were identified from the SSR; these articles revealed definitions, knowledge, skills and approaches to nurturing professionalism. Through the modified Delphi approach, we identified professional traits, virtues, communication, ethical, self-care, teaching and assessment methods, and support mechanisms.

Conclusion: The results of this study formed the basis for a holistic and longitudinal programme focused on instilling professional traits and competencies over time through personalised and holistic support of physicians. The findings will be of interest to medical communities in the region and beyond.

Keywords: Medical curriculum, medical education, modified Delphi, nurturing professionalism, Singapore

INTRODUCTION

Professionalism in medicine is defined as “humanistic attributes and behavioural standards that define a doctor and the doctor–patient relationship”.1,2 Agencies such as Accreditation Council for Graduate Medical Education (ACGME), American Board of Internal Medicine (ABIM), Canadian Medical Education Directives for Specialists (CanMEDS), General Medical Council (GMC) and Singapore Medical Council (SMC) have detailed concepts of professionalism that all physicians are expected to adhere to.3-8 However, the current literature recognises nurturing professionalism to be a dynamic, evolving and socioculturally attuned process that must be instilled in stages, over a period of time, and with support from mentors and educators in a contextually sensitive, clinically appropriate manner.9-16 Critically, data also suggest that nurturing professionalism impacts personal identities, societal roles and responsibilities, and even...
reliational self-concepts. This new perspective shifts the focus away from merely teaching and assessing professional values and principles to developing and nurturing the formation of a physician’s professional identity.[9,16]

Jarvis-Selinger et al.[17] describe the holistic and personalised development of professional identity as “an adaptive developmental process that happens simultaneously at two levels: (1) at the level of the individual, which involves the psychological development of the person and (2) at the collective level, which involves the socialization of the person into appropriate roles and forms of participation in the community’s work”. This evolving personalised and longitudinal process of professional identity formation (PIF) — an adaptive developmental process that involves the psychological development of an individual and socialisation of the individual into appropriate roles and participation at work — occurs in an organised stage-like manner, underlining the need for longitudinal structuring and holistic support.[18,19]

To structure efforts to nurture PIF, a comprehensive training programme must include competency-based assessments of progress that provide personalised, appropriate, specific, timely, accessible and achievable feedback, as well as support of a physician’s evolving PIF.[18,19] The programme must also view nurturing PIF through the lens of prevailing sociocultural norms, values and beliefs, and take into account the influence of regnant health care, education and healthcare funding structures.[20]

A systematic review by Berger et al.[21] on teaching professionalism in the postgraduate medical setting reaffirms that efforts to nurture professionalism among physicians must incorporate prevailing contextual and sociocultural factors. Efforts in Singapore must account for its unique family-centric practices, healthcare funding system, and a medical education curriculum that draws on the fusion of US-based residency programmes and remnants of the British-based training system it inherited.[22] The objective of this study was to guide the design of a socioculturally sensitive programme aimed at nurturing professionalism among physicians in Singapore.

**METHODS**

To achieve its goals of creating an evidence-based socioculturally sensitive programme, this study adopted a three-phase approach: Phase 1 — conduct a systematic scoping review (SSR) using Krishna’s systematic evidence-based approach (SEBA)[23,24] (a structured and accountable approach used to guide analyses to ensure reproducible and robust data) to identify key elements of a programme aimed at nurturing professionalism among physicians; Phase 2 — create a content-valid questionnaire from the data drawn from SSR; and Phase 3 — employ the tool to determine the views of Singapore’s local experts on the content and manner of nurturing professionalism in the local postgraduate medical setting.

**Phase 1: SEBA-guided SSR**

Given the absence of a priori concepts of professionalism and diverse approaches to its study, a five-member research team applied Krishna’s SEBA[23,25,26] to guide an SSR (henceforth SSR in SEBA).[27-29] Use of an SSR in SEBA facilitates identification of available data, key characteristics and knowledge gaps in nurturing professionalism in the extant literature.[22,27-41]

The SEBA methodology facilitates a reproducible, accountable and transparent means of identifying patterns, relationships and disagreements across a wide range of study formats and settings.[23,25,26] Built on a constructivist perspective and relativist lens, SSRs in SEBA account for the historical, sociocultural, ideological and contextual circumstances surrounding professional identity.[23,25,26]

In keeping with SEBA, a team of experts was engaged to oversee and advise the research team at all stages of the research process.[23,25,26] It comprised a medical librarian from the Yong Loo Lin School of Medicine, National University of Singapore, and local educational experts and clinicians from National Cancer Centre Singapore, Palliative Care Institute Liverpool and Duke-NUS Medical School (henceforth the expert team). The expert team served to enhance accountability and promote a balanced approach to design, analysis and synthesis of the review.[23,25,26] To ensure that data were meaningfully pieced together, both research and expert teams adopted an interpretivist approach.[42-45] This process was supplemented by adaptation of Noblit and Hare’s[46] seven phases of meta-ethnography as part of the funnelling process. The six stages of SEBA are shown in Figure 1.

**SEBA Stage 1: systematic approach**

The research and expert teams reviewed the overall objectives and determined the population, context and concept to be evaluated. This decision was guided by the preferred reporting...
items for systematic review and meta-analysis (PRISMA) protocols 2015 checklist.\textsuperscript{[47,48]}

Both teams agreed on the primary research question to be ‘What are the key aspects of professionalism that should be integrated into postgraduate medical education?’\textsuperscript{[72]} and the secondary research question to be ‘What are the best practices for nurturing professionalism among physicians in Singapore?’

A Population, Intervention, Comparison, Outcome, Study design (PICOS) format framed the research process\textsuperscript{[30,34]} [Table S1, Supplemental Digital Appendix 1]. Guided by the expert team and prevailing descriptions of PIF, the research team developed a search strategy for PubMed, Embase, PsycINFO, Education Resources Information Center, Cochrane Database of Systematic Reviews and Scopus databases. Searches were done for articles published between 1 January 1990 and 31 December 2018. The full PubMed search strategy can be found in Table S2 [Supplemental Digital Appendix 1]. All research methodologies (quantitative and qualitative) and articles translated into English were included.

Using an abstract screening tool, the research team independently reviewed the titles and abstracts to identify a list of relevant articles that met the inclusion and exclusion criteria [Table S1, Supplemental Digital Appendix 1]. Next, the team individually evaluated full-text articles within this filtered list in a second sieving process, resulting in a final list of included articles. These individual lists were discussed among the researchers during online meetings, and Sandelowski and Barroso’s\textsuperscript{[49]} ‘negotiated consensual validation’ was used to achieve consensus on the final list of articles to be included. Here, negotiated validity sees ‘research team members articulate, defend, and persuade others of the “cogency” or “incisiveness” of their points of view or show their willingness to abandon views that are no longer tenable. The essence of negotiated validity is consensus’.\textsuperscript{(p. 229)} This final list was then reviewed by the last author. The research team then evaluated the references of the included articles and performed ‘snowballing’ of references, in keeping with the SEBA methodology, to ensure a more comprehensive review of the articles.

**SEBA Stage 2: Split Approach**

To increase reliability and transparency of the analysis, three independent research sub-teams employed the Split Approach, an approach that combines content and thematic analysis of data to enhance the trustworthiness and depth of an analysis.\textsuperscript{[24,49]} One group used Braun and Clarke’s\textsuperscript{[50]} approach to thematic analysis, while the second group employed Hsieh and Shannon’s\textsuperscript{[51]} directed content analysis of prevailing accounts of nurturing professionalism. The reviewers within each sub-team achieved consensus on their analyses before comparing with the other sub-team. This concurrent analysis of evidence-based and non-evidence-based data was to ensure transparency of their influence on the synthesis of the narrative. A third group tabulated summaries of the accrued data to ensure key information was not lost and that the findings were viable and comparable with regnant practices.

In the absence of rigorous definitions of PIF, two members of the research team adopted Braun and Clarke’s\textsuperscript{[50]} approach to identify key themes across different learning settings, goals as well as learner and instructor populations.\textsuperscript{[52-60]} This allowed for a wide range of research methodologies within the articles to be circumnavigated, preventing the use of statistical pooling and analysis.\textsuperscript{[61,62]} This sub-team independently reviewed the included articles, constructed codes from surface meaning of the text and collated these into a code book, which was used to code and analyse the rest of the articles in a reiterative process. New codes were associated with previous codes and concepts.\textsuperscript{[63-65]} An inductive approach allowed for the themes to be ‘defined from the raw data without any predetermined classification’.\textsuperscript{[66]} Finally, the sub-team discussed its independent analyses in online and face-to-face meetings and used Sandelowski and Barroso’s\textsuperscript{[49]} ‘negotiated consensual validation’ to derive the final themes.

In tandem, two members of the research team independently employed Hsieh and Shannon’s\textsuperscript{[51]} approach to directed content analysis. This involved ‘identifying and operationalising a priori coding categories’ by classifying text of similar meaning into categories drawn from prevailing theories.\textsuperscript{[53,57-71]} Four members first used deductive category application\textsuperscript{[69]} to extract codes and categories from Cruess et al.’s\textsuperscript{[19]} article, “A schematic representation of the professional identity formation and socialization of medical students and residents: A guide for medical educators”. A code book was developed, and individual findings were discussed through online and face-to-face meetings. Differences in codes were discussed, and Sandelowski and Barroso’s\textsuperscript{[49]} ‘negotiated consensual validation’ was used to arrive at the final list of categories.

**SEBA Stage 3: Jigsaw Perspective**

The Jigsaw Perspective, whereby the overlaps between the themes and categories delineated by content and thematic analysis are merged, like complementary ‘pieces of the jigsaw’, allows for a holistic perspective of the data. The Jigsaw Perspective hinges on Moss and Haertel’s\textsuperscript{[72]} suggestion that complementary qualitative data should be reviewed together to give “a richer, more nuanced understanding of a given phenomenon”. This notion inspired careful consideration of the themes/categories identified in the Split Approach. In the Jigsaw Perspective, each theme and category are viewed as a piece of a jigsaw that may be combined with appropriate or complementary pieces, allowing for a more complete picture.

Guided by the Jigsaw Perspective, the research team determined and combined themes/categories that showed overlaps and similarities to garner a more realistic and holistic picture of available data on nurturing professionalism.
SEBA Stage 4: Funnelling
The findings of the Jigsaw Perspective were compared with the tabulated summaries of the included articles. Two research team members independently summarised and tabulated the included full-text articles according to Wong et al.'s RAMESES publication standards and Popay et al.'s guide to conducting narrative synthesis in systematic reviews. This verified that key aspects of the included articles were not lost.

The funnelling process allowed for the comparison of themes/ categories with the tabulated summaries to verify if the results were an accurate representation of existing data. To aid this process, the research team adopted Phases 3–6 from France and Uny’s adaptation of Noblit and Hare’s seven phases of meta-ethnography to study the included articles. In Phase 3, they described the nature, main findings and conclusions of the included articles in the tabulated summaries. In Phase 4, they juxtaposed the themes and categories, primarily by grouping the themes and categories by their focus. This was helped by the commensurate focus of the included articles from which the themes and categories were drawn. The homogeneity of the themes and categories allowed the adoption of reciprocal translation and latterly the mapping of the various themes/ categories in Phase 6.

These themes/categories that will form the basis of the new storyline or overarching explanation of a phenomenon, referred to as ‘the line of argument’ by Noblit and Hare, are presented in the ‘Results’ section.

SEBA Stage 5: Reiterative Process
As with all the stages, the findings of the funnelling process were scrutinised by the expert team.

SEBA Stage 6: Discussion — synthesis of SSR in SEBA
The Best Evidence Medical Education Collaboration guide and the Structured approach to the Reporting In healthcare education of Evidence Synthesis statement were adopted to guide the synthesis of the discussion.

Phase 2: Creating a content-valid questionnaire
Findings of the SSR in SEBA formed the basis for a content-valid questionnaire. All members of the research team independently reviewed Phase 1’s findings and drew up a list of questions to be included in the questionnaire. Sandelowski and Barroso’s ‘negotiated consensual validation’ approach was employed to achieve the final list of questions. The final list was reviewed by the expert team.

Phase 3: Modified Delphi approach
Following Institutional Review Board exemption (ref. 2020/2817), Phase 3 involved the administration of the newly designed curricula framework questionnaire [see Supplemental Digital Appendix 2] among a purposive sample of six senior clinician educators who were not members of the research or expert team as part of a modified Delphi approach. The participants were acknowledged experts in curricular design, professionalism and/or had previous publications on these subjects. The participants were also from medical and surgical backgrounds, and from more than one organisation and healthcare group.

Participants assessed specific elements of a particular professionalism curriculum and whether these elements should warrant inclusion in a new professionalism curriculum tailored specifically to the postgraduate medical setting. The importance of the elements to be included in the new curriculum was rated using a single best-answer questionnaire, and the participants indicated whether to include or exclude the item in the curriculum. In addition, the participants were provided with an opportunity to comment on and add to items within each section.

A 70% consensus agreement for each item’s inclusion was prespecified by the research team (i.e. an item with more than 70% of participant agreement for inclusion was incorporated in the new professionalism curriculum). The final list constituted of specific elements that were incorporated into the new professionalism curriculum.

RESULTS
Phase 1: SSR in SEBA Findings
Literature searches identified 14,458 articles. Out of the 951 full-text articles that were reviewed, 124 full-text articles were included and analysed [Table S3, Supplemental Digital Appendix]. A summary of the PRISMA process can be found in Figure 2. The following themes/categories were derived from the funnelling process in Stages 4 and 5 of SEBA.

Definition of professionalism
Professionalism can be defined by clinical competency — the set of values, behaviours and relationships that underpins the public’s trust in doctors, demonstrated through a foundation of competence in communication skills and the ethical and legal understanding upon which the aspiration and application of principles of professionalism are built. It is believed to be centred around accountability and the strive for excellence, such as a commitment to lifelong learning and duty, advocacy and service.

Some papers also acknowledged that professionalism should be considered in more dynamic and behavioural terms, such as being governed by principles of excellence, humanism, accountability and altruism, entailing elements of honour, integrity, duty, advocacy, humanistic qualities, ethical and moral standards, and respect in service of others, which can be manifested in professional behaviours, including but not limited to, punctuality, confidentiality, honesty, objectivity and teamwork. Some recognised professionalism as an attitude that transcends a physician’s self-interest, only to be focused on the patient’s
needs, and it is built upon the principles of patient welfare, autonomy and social justice.\[92,93,96,98,125,126,132-143\] In essence, prevailing definitions acknowledge the evolving nature of concepts of professionalism that are built on attaining clinical competence, instilling humanistic and altruistic values, and lifelong learning.

Establishing training domains

Approaches involved in nurturing professionalism are outlined in Box 1.

Published topics on professionalism

Key aspects of an effective programme to nurture professionalism are set out in Box 2. These topics must be accompanied by clear, specific, measurable, achievable, relevant and time-bound objectives.\[174\]

How professionalism is nurtured

In keeping with the notion that professionalism develops upon the twin elements of knowledge and skills, and reflections and guided exposure, we summarise both aspects in Table 1.

Challenges to nurturing professionalism

The challenges include lack of consistent and objective assessment tools,\[116,138,205\] individualisation — failure to adapt the approach to individual needs,\[11,12,144,156-159,206,207\] time constraints,\[202\] lack of institutional support in terms of protected time for teaching\[10,11,160,202,208\] and heterogeneity in teaching professionalism.\[21\]

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**Figure 2**: Preferred reporting items for systematic review and meta-analysis flowchart.

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**Box 1. Domains of professionalism.**

**Competency and assessment**
- Competency in aspects of clinical skills include knowledge, clinical reasoning and decision-making, effective communication with patients and the healthcare team\[11,144-148\].
- Competency in aspects of moral standards include altruism, honour, demonstration of respect, integrity and empathy\[125\].
- Assessment can be viewed as an opportunity for feedback and self-improvement\[19,103,144,148,151\].
- Competency in navigating challenging conversations\[108,134,152\].

**Competing interest and priorities**
- Involves navigation of multiple interests, competing priorities and interpersonal relationships in workplace practices.
- Acting professionally requires the physician to balance complex and competing values and perspectives across spheres of influence from patients, immediate care team and within the larger practice environment\[103,111,112,153-156\].
- Mentee well-being, established through teaching coping strategies and providing emotional support\[103,111,112,153-155\].

**Self-directed learning and reflection**
- Room for reflection and discussion to foster a professional identity based on affiliation, representation and attention, which are needed in graduate medical education, and learning from individual professional experiences.
- Includes the journey of personal excellence and self-improvement, enabled through timely feedback avenues\[10,85,86,96,103,132,141,144,156-159\].
- Supporting professional identity formation\[111,124,138,170-173\].

**Phase 2: Creating a content-valid questionnaire**

Based on the findings from SSR in SEBA, a 67-item questionnaire was created comprising the following sections: communication and challenging scenarios (eight items),
Box 2. Professionalism topics.

**Communication and challenging scenarios**
- Interpersonal communication, verbal and non-verbal communication skills [108, 176, 180, 181]
- Delivery of bad news and difficult conversations [90, 132]
- Physician–patient communication [97]
- End-of-life issues [108, 176, 180, 181]
- Informed consent [156]
- Communication skills relating to ethical issues [108]
- Challenging interactions [108, 135]
- Conflict resolution [128, 135]
- Medical improvisation [107]

**Ethics**
- Ethics and legal issues, including issues of unsolicited medical opinion, ethics of whistle blowing, publication ethics, drug pricing, research ethics and commercial conflicts of interest [108, 180, 181]
- Code and principle of professional ethics [108, 180, 181]
- Issues relating to mental capacity, informed consent and delivery of bad news [108, 180, 183]
- Bringing ethical theory to bedside [143]

**Virtues**
- Compassion, respect and empathy [10, 141]
- Honesty, integrity and accountability [10, 141, 188]
- Implication of values in practice [110]
- Excellence and continuous improvement [108]
- Reliability and responsibility [141]
- Knowledge of limits [141]
- Communication and collaboration [141]
- Altruism and advocacy [141, 146]

**Professionalism**
- Teamwork and collaboration [172]
- Coping skills training, including coping strategies, conflict management, communication training, learning from mistakes, admitting mistakes, handling difficult situations, delivery of bad news, practice-based learning and improvement [2, 16, 21, 108, 146, 150, 153, 184]
- Professional interactions with patients and society, surgeons, colleagues, team members of the support team, interdisciplinary respect, working as a team, coordination of care, working across languages and cultures [10, 177, 184, 186]
- Professional attitudes and behaviours, including leadership skills training, self-management, team leading and teamwork, professional judgement, self-awareness, humanistic care, professional integrity, the pursuit of excellence, humility, respect for others, resource management, situational awareness [10, 180, 182, 183, 188, 183, 184, 186]
- Cultural competence and professionalism in culture [71, 188, 187, 186]
- Experiential learning, including practice-based learning, improvement and modelling of professional behaviour [109, 111, 146, 187, 186]

**Self-care and reflection**
- Self-directed learning and self-assessment [109, 156]
- Self-awareness and self-improvement [141, 142]
- Responsibility to self [108]
- Mindfulness and self-care [111]
- Reflective exercises, including self-reflection, goal setting, recognition of achievements [10, 177, 180, 190, 190]
- Admitting limitations [182]
- Depression and burnout [108]
- Time management [109, 110, 142, 177, 182]

**Clinical skills**
- Prevention, diagnosis and treatment of major clinical threats [197]

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**Table 1. Proposed strategy for nurturing professionalism.**

| Curriculum | Subtheme | Elaboration |
|------------|----------|-------------|
| Knowledge and skills | Role modelling and mentoring | - Emulate humanism and professional values through role modelling of non-verbal and verbal behaviours [88, 150, 199]  
- **Non-verbal cues refer to:** listening closely to patients, appropriate touching, demonstration of respect and building a personal connection  
- **Verbal behaviours refer to:** tone of voice, pace of speech and communication components, eliciting and addressing emotional responses  
- Creating role models for faculty members offers an area of learning, an opportunity to implement professionalism and a chance to develop faculty members [89, 106, 167, 173, 128, 143, 173, 102, 189, 150, 206]  
- Reward exemplary behaviour demonstrating professionalism [174, 201] |
| Experiential learning | - Experiential learning is a means of learning through experience, whereby there is an integration of knowledge and doing, in which both are repeatedly transformed [109, 144] |
| Workshops and seminars | - Tackling issues of ethical conflicts and preparation [150]  
- Formal lectures on professionalism concepts to effectively define expectations for professional behaviour [100, 111, 150, 169, 189, 173, 151, 191, 157, 200]  
- Includes case-based discussion, role-playing and standardised patient exercises [2, 154, 203] |
| Reflections and guided exposure | Reflection on practice [106, 144, 160, 167, 190]  
- Reflection on practice where physicians learn from their own professional experiences to develop a professional identity and improvement. Reinforces the learning that happens experientially [10, 144, 160, 167, 190] |
| Exposure during professional practice | - Skilful navigation of challenging social and ethical situations that cannot be taught in a didactic setting [105]  
- Emotionally intense experiences as triggers for personal growth and create opportunities to challenge and reinforce a physician’s beliefs [156] |
| Decision-making | - Emphasis on multidisciplinary expertise [88, 152, 204]  
- Stepwise learning through practice [18]  
- Day-to-day interactions among trainees and mentors, allowing exchange of ideas, experiences and environmental values, norms and expectations [189] |
ethics and legal issues (nine items), professional attributes (14 items), virtues (four items), self-care and reflection (10 items), teaching methods (12 items), assessment methods (three items) and institutional support (three items).

**Phase 3: Modified Delphi process**

Five out of six senior clinician educators completed all sections of the framework questionnaire, while one left sections 7 and 8 uncompleted. List of items and responses are summarised in Table S4, Supplemental Digital Appendix 1, and the final proposed curricula framework is presented in Table S5, Supplemental Digital Appendix 1.

Overall, all items within the sections ‘communication and challenging scenarios’, ‘virtues’ and ‘self-care and reflection’ met the 70% inclusion threshold and were included in the postgraduate professionalism curriculum.

Contrary to recent studies, role modelling, ‘lectures on the expectations for professional behaviour’, ‘portfolio that documents professional behaviour and participation in on-the-job experiences that build professionalism and reflection’, ‘regular evaluation in the professionalism domains’ and ‘establish feedback portal where physicians can identify their learning gaps and request for more training’ were excluded, as they did not meet the 70% inclusion threshold. With general consensus of the items in the survey and no additional items proposed, a second round of the survey was not carried out.

**DISCUSSION**

The development of a campus-wide approach to nurturing professionalism must be seen as a part of efforts to build PIF among postgraduate physicians. While it is evident that this process must be evidence based, the nature of professionalism underscores the need for it to be informed by prevailing sociocultural considerations and health care, healthcare financing, education and legal systems. Thus, the use of a modified Delphi process built on evidence-based data and guided by local experts would appear to be an appropriate means of getting ‘buy in’ into this project within the local setting.

Phase 1 of SSR in SEBA sought to answer the first research question — ‘What are the key aspects of professionalism which should be integrated into postgraduate medical education?’ Our analysis on the various definitions of professionalism led to the definition that professionalism is a longitudinal, evolving and abstract concept built on attaining clinical competence, instilling humanistic and altruistic attributes with a commitment to lifelong learning and self-improvement. This perspective echoes many of the features set out by accredited bodies such as ACGME, ABIM, CanMEDS, GMC and SMC. Perhaps just as significant as seeing professionalism as an abstract concept is the affirmation that professionalism includes a lifelong commitment to honing individual skills and competencies, and reaffirming values, beliefs, principles and practices of professionalism in changing conditions. Together, this definition reaffirms several important insights on key concepts of professionalism and how it is to be nurtured.

The wide range of available training domains, topics and approaches to nurturing PIF in current medical education curriculums focus on integrating requisite clinical knowledge and skills, pointing to the notion of developing PIF in stages. This concept of developmental stages in PIF is consistent with Cruess et al.’s concept of an organised, stage-like progression of PIF that culminated in their article, ‘A schematic representation of the professional identity formation and socialization of medical students and residents: A guide for medical educators’. Cruess et al.’s addition of an ‘IS’ level atop Miller’s pyramid, signifying the attainment of a professional identity, also reaffirms the notion that progress along the various stages was determined by attainment of specific competencies at each stage of development. In turn, this also lent weight to Cruess et al.’s positing of regular competency-based assessments and personalised, appropriate, specific, timely, accessible, achievable, longitudinal and holistic feedback guiding progress.

Many factors undermine the success of nurturing professionalism, though perhaps most significant is the failure to individualise such an approach to individual needs. The provision of personalised and holistic support of physicians highlights the need for a mentoring programme. Mentoring, coupled with aspects of role modelling, supervision, coaching, networking, sponsorship and advising, would allow the provision of personalised, appropriate, specific, timely, holistic and longitudinal support needed to nurture the ethical, professional, moral and personal traits and practices of trainees.

Equally important, mentoring would allow opportunities for continuous assessments, regular sharing, supported reflections, timely feedback and potential remediation for clinicians, even after they have attained the ‘IS’ level of Cruess et al.’s adaptation of Miller’s pyramid. This is in acknowledgement of the need for support in maintaining and realigning values, beliefs, principles and thinking in different settings.

Phases 2 and 3 sought to answer our second research question, ‘What are the best practices for nurturing professionalism among physicians?’. Local experts, in line with the definition proffered above, suggest that nurturing professionalism in the postgraduate setting should focus on a ‘dual approach’. Drawn from findings in the modified Delphi process, the ‘dual approach’ confers equal considerations to attaining competencies and providing personalised and holistic support to trainees. Under the ‘dual approach’, knowledge and skills training as well as approaches that focus on shaping attitudes need to be structured and accompanied by effective scaffolding to support postgraduates at different stages of their careers,
with different needs, skills, motivations, goals and sociocultural, personal and professional considerations. Thus, a consistent approach to nurturing professionalism must be adopted replete with clear objectives, approaches and assessment methods.

In contrast with the prevailing literature, responses from the modified Delphi rejected portfolio use. This is rather surprising. Despite acknowledgement of PIF’s longitudinal and personalised nature, local experts did not feel the need to adopt this approach to training, which could be due to the lack of understanding in its use for nurturing professionalism. Deeper consideration and discussions with the expert team paint a different view, pointing instead to the limitations posed by running a portfolio-based approach (in terms of ‘buy in’ from the users). Here, the maintenance and regular review of the portfolio, as well as the persistent need for assessors to support growth, encourage reflections, provide guidance and feedback, and utilise effective assessment tools suggest a pragmatic rejection of portfolios. In its stead, it could be argued that the local experts favour the inculcation of values and principles, ethical concepts and professional competencies that are supported by self-directed learning, supported reflections, role modelling of virtues and practices, as well as mentoring to provide physicians with the skills and support to navigate professional issues effectively, knowing where and when to ask for support in a timely manner. Incumbent upon this process, however, is the ‘judgement that the learner has enough experience to act appropriately when facing unexpected challenges’. This reflects the importance placed by local experts on verifying and documenting competency at the ‘Does’ level of Miller’s pyramid\(^{213}\) or even at the level of the ‘Is Trusted’ level of Ten Cate et al.,\(^{7}\) ‘extended’ pyramid. Such an approach would seem more sustainable in the local setting.

**LIMITATIONS**

There are several limitations to this study. While the databases used were identified by the expert team, critical papers could have been missed, despite our efforts to use independent selection processes. Similarly, while the use of the Split Approach and tabulated summaries allowed for triangulation and transparency in selection of the direction of SSR in SEBA, inherent biases among the reviewers would still impact analysis of the data. Furthermore, the inclusion of grey literature may have led to bias in the results and may have provided opinion-based views with a ‘veneer of respectability’, despite a lack of evidence supporting them. This raises the question of whether grey literature should be accorded the same weight as published literature.

**CONCLUSION**

Findings from SSR extend prevailing knowledge on the definition and best practices in nurturing professionalism in medical education. While the latter part of the study focused on nurturing PIF in Singapore, our results and analysis from the modified Delphi add to medical education by introducing a more holistic approach applicable to practice in other countries in the region and beyond, which have similar healthcare systems to Singapore. In addition, our study has opened the door to a number of related discussions and studies by highlighting the significance of mentoring in the local setting. Perhaps given growing evidence that mentoring could provide the holistic personalised support desired for trainees and offer a means of holistic assessment and longitudinal oversight required, it is clear that further study is required on mentoring’s role in supporting and assessing holistic development, assessment tools to assess PIF and training of mentors. Such data in tandem with the verified inculcation of appropriate traits and practices of a professional would facilitate a sustainable means of supporting PIF.

**Acknowledgement**

This paper is dedicated to the late Dr S Radha Krishna, whose advice and ideas were integral to the success of this study.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**Supplemental digital content**

Appendix 1 at http://links.lww.com/SGMJ/A114
Appendix 2 at http://links.lww.com/SGMJ/A115

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Table S1: PICOS inclusion and exclusion criteria applied to database search

| PICOS         | Inclusion Criteria                                                                 | Exclusion Criteria                                                                                                                                 |
|---------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Population    | Physicians within the clinical, medical, research and/or academic settings          | Allied health specialties such as Pharmacy, Dietetics, Chiropractic, Midwifery, Podiatry, Speech Therapy, Occupational and Physiotherapy, Non-medical specialties such as Clinical and Translational Science, Alternative and Traditional Medicine, Veterinary, Dentistry |
| Intervention  | Nurturing and teaching Professionalism and/or Professional Competencies for physicians | NA                                                                                                                                               |
| Comparison    | Comparisons of the various practices (approaches, modalities, processes, objectives, motivations, challenges, facilitating characteristics/resources) | NA                                                                                                                                               |
| Outcome       | Approaches, modalities, processes, objectives, motivations, challenges, facilitating characteristics/resources in nurturing and teaching professionalism Impact of teaching professionalism on host organisation, assessors, and assessees (doctors) | NA                                                                                                                                               |
| Study design  | Articles in English or translated to English                                         | Grey Literature / electronic and print information not controlled by commercial publishing Case reports and series, ideas, editorials, and perspectives Articles focusing on non-human subjects |
|               | All study designs including:                                                        |                                                                                                                                                  |
|               | • Mixed methods research, meta-analyses, systematic reviews, randomised controlled trials, cohort studies, case-control studies, cross-sectional studies, and descriptive papers |                                                                                                                                                  |
|               | Year of Publication: 1 January 1990 – 31 December 2018                               |                                                                                                                                                  |
|               | Databases: PubMed, Embase, PsycINFO, ERIC, Cochrane Database of Systematic Reviews, Scopus |                                                                                                                                                  |
Table S2: PubMed Search Strategy

| Search | Concept | Subject Headings (MeSH) | Keywords [tiab] |
|--------|---------|-------------------------|-----------------|
| 1      | Nurturing | "Hospitals, Teaching"[MeSH] | teaching[tiab] OR teachings[tiab] OR teach[tiab] OR teacher[tiab] OR teachers[tiab] OR tutor[tiab] OR tutors[tiab] OR tutoring[tiab] OR education[tiab] OR educations[tiab] OR educating[tiab] OR educator[tiab] OR educators[tiab] OR nurture[tiab] OR nurtures[tiab] OR nurturing[tiab] OR train[tiab] OR trains[tiab] OR training[tiab] OR trainer[tiab] OR develop[tiab] OR develops[tiab] OR developing[tiab] OR learn[tiab] OR learns[tiab] OR learning[tiab] OR promote[tiab] OR promotes[tiab] OR promoting[tiab] OR coach[tiab] OR coaching[tiab] |
| 2      | Professionalism | “Professionalism”[MeSH] OR “Professional Competence”[MeSH] OR “Professional Role” [MeSH] OR “ethics, medical”[MeSH] OR “patient-centered care”[MESH] | Professional[tiab] OR Professionalism[tiab] |
| 3      | Doctors/Medical Students | Physicians[MeSH] OR “Students, Medical”[MeSH] OR “Education, Professional”[MeSH] OR “Clinical Clerkship”[MeSH] | Physician[tiab] OR Physicians [tiab] OR resident[tiab] OR residents[tiab] OR residency[tiab] OR residencies[tiab] OR practice[tiab] OR practitioner[tiab] OR practitioners[tiab] OR doctor[tiab] OR doctors[tiab] OR houseman[tiab] OR housemanship[tiab] OR housemens[tiab] OR “medical officer”[tiab] OR “medical officers”[tiab] OR “medical student”[tiab] OR “medical students”[tiab] |
| 4      | Medical education | “Education, Medical, Graduate”[Mesh] OR "Education, Medical, Undergraduate”[Mesh] OR "Clinical Clerkship”[Mesh] OR "Medicine”[Mesh] OR "Schools, Medical”[Mesh] | Medicine[tiab] OR “medical education”[tiab] OR “medical school*”[tiab] |
| 5      | ACGME Professionalism Core Competency | “Accreditation Council for Graduate Medical Education”[tiab] OR ACGME[tiab] OR “Professional Conduct”[tiab] OR Accountability[tiab] OR Humanism[tiab] OR “Cultural Proficiency”[tiab] OR “Emotional Health”[tiab] OR “Physical Health”[tiab] OR “Mental Health”[tiab] OR “Personal Growth”[tiab] OR “Professional Growth”[tiab] |
| 6      | General Medical Council (GMC) Generic Professional Capabilities Framework-Professional | “General Medical Council Generic Professional Capabilities Framework”[tiab] OR GMC[tiab] OR “Professional Value”*[tiab] OR “Professional Behaviour”*[tiab] |
|   | values and behaviours |   |
|---|----------------------|---|
| 7 | CanMEDS (Canadian Medical Education Directions for Specialists—name is no longer in use) Physician Competency Framework—Professional role | “Canadian Medical Education Directions for Specialists”[tiab] OR CanMEDS[tiab] OR Commitment[tiab] |

SEARCH STRATEGY:

1 AND 2 AND 3 AND 4 AND (5 OR 6 OR 7)
Table S3: List of full-text articles

| No. | Title                                                                 | Authors                                                                 | Year | Journal                                      |
|-----|------------------------------------------------------------------------|------------------------------------------------------------------------|------|----------------------------------------------|
| 1   | “Once when i was on call…,” theory versus reality in training for professionalism | S. Eggly, S. Brennan, and W. Wiese-Rometsch                              | 2005 | Academic Medicine                            |
| 2   | A behavioral and systems view of professionalism                        | C. S. Lesser, C. R. Lucey, B. Egener, C. H. Braddock, S. L. Linas, W. Levinson | 2010 | JAMA                                         |
| 3   | A continuing medical education approach to improve sexual boundaries of physicians | W. A. Spickard, Jr., W. H. Swiggart, G. T. Manley, C. P. Samenow and D. T. Dodd | 2008 | Bulletin of the Menninger Clinic            |
| 4   | A framework for developing excellence as a clinical educator             | E. A. Hesketh; G. Bagnall; E. G. Buckley; M. Friedman; E. Goodall; R. M. Harden; J. M. Laidlaw; L. Leighton-Beck; P. McKinlay; R. Newton; R. Oughton | 2001 | Medical Education                            |
| 5   | A good clinician and a caring person: longitudinal faculty development and the enhancement of the human dimensions of care | W. T. Branch; R. Frankel; C. F. Gracey; P. M. Haidet; P. F. Weissmann; P. Cantey; G. A. Mitchell; T. S. Inui | 2009 | Academic medicine                            |
| 6   | A multi source feedback program for anesthesiologists                   | J. M. Lockyer; C. Violato; H. Fidler                                   | 2006 | Canadian journal of anaesthesia = Journal canadien d'anesthesie |
| 7   | A prospective study of the relationship between medical knowledge and professionalism among internal medicine residents | C. P. West; J. L. Huntington; M. M. Huschka                            | 2007 | Academic Medicine                            |
| 8   | A qualitative study of improving preceptor feedback delivery on professionalism to postgraduate year 1 residents through education, observation, and reflection | R. A. Brauch, C. Goliath, L. Patterson, T. Sheers, N. Haller           | 2013 | Ochsner Journal                             |
| 9   | ACGME core competency training, mentorship, and research in surgical subspecialty fellowship programs | M. Francesca Monn, M. H. Wang, M. M. Gilson, B. Chen, D. Kern and S. L. Gearhart | 2013 | Journal of surgical education               |
| 10  | An integrative approach to cultural competence in the psychiatric curriculum | K. Fung, L. Andermann, A. Zaretsky and H. T. Lo | 2008 | Academic Psychiatry                          |
| 11  | An internet-based learning portfolio in resident education: the KOALA multicentre programme | M. F. Fung; M. Walker; K. F. Fung; L. Temple; F. Lajoie; G. Bellemare; S. C. Bryson | 2000 | Medical Education                            |
| 12  | An Overview of Cultural Competency Curricula in ACGME-accredited General Surgery Residency Programs | S. S. Shah, F. B. Sapigao, 3rd and M. B. J. Chun                      | 2017 | Journal of surgical education               |
| 13  | Application of the core competencies after unexpected patient death: consolation of the grieved | D. Taylor, A. Luterman, W. O. Richards, R. P. Gonzalez and C. B. Rodning | 2013 | Journal of surgical education               |
| 14  | Assessing residents' competency in care management: report of a consensus conference | J. G. Frohna; A. Kalet; E. Kachur; S. Zabar; M. Cox; R. Halpern; M. G. Hewson; M. J. Yedidia; B. C. Williams | 2004 | Teaching and Learning in Medicine          |
| 15  | Assessment of resident physicians in professionalism, interpersonal and | B. Qu, Y. H. Zhao, B. Z. Sun | 2012 | Int Sci                                     |
| No. | Title                                                                 | Authors                                                                                       | Journal                           | Year |
|-----|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------|------|
| 16  | Attributes of excellent attending-physician role models               | S. M. Wright; D. E. Kern; K. Kolodner; D. M. Howard; F. L. Brancati                            | New England Journal of Medicine    | 1998 |
| 17  | Being prepared to work in Gynecology Medicine: evaluation of an intervention to promote junior gynecologists professionalism, mental health and job satisfaction | S. Mache, L. Baresi, M. Bernburg, K. Vitzthum and D. Groneberg                               | Archives of Gynecology and Obstetrics | 2017 |
| 18  | Can poetry make better doctors? Teaching the humanities and arts to medical students and residents at the University of California, Irvine, College of Medicine | J. Shapiro; L. Rucker                                                                      | Academic Medicine                  | 2003 |
| 19  | Can professionalism be taught? Encouraging evidence                   | M. S. Hochberg, A. Kalet, S. Zabar, E. Kachur, C. Gillespie and R. S. Berman                 | The American Journal of Surgery    | 2010 |
| 20  | Case-based multimedia program enhances the maturation of surgical residents regarding the concepts of professionalism | A.S. Kumar, D. Shibru, M. K. Bullard, T. Liu, and A. H. Harken                             | Journal of Surgical Education      | 2007 |
| 21  | Causes of resident lapses in professional conduct during the training: A qualitative study on the perspectives of residents | H. J. Chang, Y. M. Lee, Y. H. Lee and H. J. Kwon                                          | Medical Teacher                   | 2017 |
| 22  | Critical incidents as a technique for teaching professionalism         | R. Rademacher, D. Simpson, K. Marcdante                                                     | Medical Teacher                   | 2010 |
| 23  | Cultural sensitivity training among foreign medical graduates          | K. J. Majumdar, C. LA                                                                       | Medical Education                 | 1999 |
| 24  | Defining professionalism in anaesthesiology                           | R. A. Kearney                                                                              | Medical Education                 | 2005 |
| 25  | Development and Early Piloting of a CanMEDS Competency-Based Feedback Tool for Surgical Grand Rounds | C. Fahim, M. Bhandari, I. Yang and R. Sonnadara                                           | Journal of Surgical Education      | 2016 |
| 26  | Development and evaluation of standardized narrative cases depicting the general surgery professionalism milestones | A. Rawlings, A. D. C. Knox, Y. S. Park, S. Reddy, S. R. Williams, N. Issa, A. Jameel, and A. Tekian | Academic Medicine                 | 2015 |
| 27  | Development of a physician attributes database as a resource for medical education, professionalism and student evaluation | D. Rabinowitz; S. Reis; R. Van Raalte; G. Alroy; R. Ber                                   | Medical Teacher                   | 2004 |
| 28  | Development of the first guideline for professional conduct in medical practice in Iran | S. Saeedi Tehrani, F. Nayeri, A. Parsapoor, A. Jafarian, A. Labaf, A. Mirzazadeh, H. Emadi Kouchak, F. Shahi, N. Ghasemzadeh and F. Asghari | Archives of Iranian Medicine      | 2017 |
| 29  | Difficult conversations in health care: cultivating relational learning to address the hidden curriculum | D. M. Browning, E. C. Meyer, R. D. Truog, M. Z. Solomon                                   | Academic Medicine                 | 2007 |
| 30  | Diving for PERLS-working and performance portfolios for evaluation and reflection on learning | L. E. Pinsky; K. Fryer-Edwards; T. P. Webb; C. Aprahamian; J. A. Weigelt; K. J. Brasel; J.; D. Snadden | Internal Medicine                | 2006 |
| Supplemental Digital Content: Teo, et al. A modified Delphi approach to nurturing professionalism in postgraduate medical education in Singapore. Singapore Med J |  |
|---|---|---|---|
| 31 | Doctors in acute and longitudinal care specialties emphasise different professional attributes: implications for training programmes | J. M. Garfield; F. B. Garfield; N. D. Hevelone; N. Bhattacharyya; D. F. Dedrick; S. W. Ashley; E. S. Nadel; J. T. Katz; C. Kim; A. A. Mitani | 2009 Medical Education |
| 32 | Doctors in society. Medical professionalism in a changing world. | W. P. o. t. R. C. o. Physicians (Working Party of the Royal College of Physicians) | 2005 Clinical Medicine |
| 33 | Educating for professionalism: trainees' emotional experiences on IM and pediatrics inpatient wards | D. L. Kasman, K. Fryer-Edwards and C. H. Braddock | 2003 Academic Medicine |
| 34 | Effect of multisource feedback on resident communication skills and professionalism: a randomized controlled trial | W. B. Brinkman, S. R. Geraghty, B. P. Lanphear, J. C. Khoury, J. A. Gonzalez del Rey, T. G. Dewitt and M. T. Britto | Archives of pediatrics & adolescent medicine |
| 35 | Emergency Medicine Resident Perceptions of Medical Professionalism | J. Jauregui, M. O. Gatewood, J. S. Ilgen, C. Schaninger and J. Strote | 2016 Western Journal of Emergency Medicine |
| 36 | Ethics education for dermatology residents | L. Bercovitch, T. P. Long | Clinics in dermatology |
| 37 | Ethics education in family medicine training in the United States: a national survey | H. M. Manson, D. Satin, V. Nelson and T. Vadiello | 2013 Family Medicine |
| 38 | Exploring the transition into practice of general paediatricians from a Canadian residency program | M. Chan and M. A. Van Manen | Paediatrics & child health |
| 39 | Factors predicting doctors' reporting of performance change in response to multisource feedback | K. Overeem; H. C. Wollersheim; O. A. Arah; J. K. Crujsberg; R. P. Grol; K. M. Lombarts | 2012 BMC medical education |
| 40 | Faculty development for teaching and learning professionalism | Y. Steinnert; R. L. Cruess; S. R. Cruess; Y. Steinert | 2009 Medical Education |
| 41 | Faculty development to enhance humanistic teaching and role modeling: a collaborative study at eight institutions | W. T. Branch, Jr., C. L. Chou, N. J. Farber, D. Hatem, C. Keenan, G. Makoul, M. Quinn, W. Salazar, J. Sillman, M. Stuber, L. Wilkerson, G. Mathew and M. Fost | Journal of general internal medicine |
| 42 | Fostering professional formation in residency: Development and evaluation of the “forum” seminar series | M. Nothnagle, S. Reis, R. E. Goldman and G. Anandarajah | 2014 Teaching and Learning in Medicine |
| 43 | General surgery morning report: a competency-based conference that enhances patient care and resident education | B. M. Stiles, T. B. Reece, T. L. Hedrick, R. A. Garwood, M. G. Hughes, J. J. Dubose, R. B. Adams, B. D. Schirmer, H. A. Sanfey and R. G. Sawyer | 2006 Current surgery |
| 44 | Graduate medical education at the Medical College of Wisconsin: new initiatives to respond to the changing residency training environment | M. S. Kochar, D. E. Simpson and D. Brown | Wisconsin Medical Journal |
| 45 | Graduate medical education competencies for international health electives: A qualitative study | H. C. Nordhuces, M. U. Bashir, S. P. Merry and A. P. Sawatsky | 2017 Medical teacher |
| 46 | High-Quality Feedback Regarding Professionalism and Communication Skills in Otolaryngology Resident Education | E. A. Faucett, H. C. McCrary, J. Y. Barry, A. A. Saleh, A. B. Erman and S. L. Ishman | Otolaryngology–Head and Neck Surgery |
| Supplemental Digital Content: Teo, et al. A modified Delphi approach to nurturing professionalism in postgraduate medical education in Singapore. Singapore Med J |
|---|---|---|
| Human dimensions in bedside teaching: focus group discussions of teachers and learners | S. Ramani and J. D. Orlander | 2013 Teaching and Learning in Medicine |
| Human simulation in emergency medicine training: a model curriculum | S. A. McLaughlin, D. Doezema and D. P. Sklar | 2002 Academic Emergency Medicine |
| Humanism and professionalism education for pediatric hematolgy-oncology fellows: A model for pediatric subspecialty training | J. C. Kesselheim, M. Atlas, D. Adams, B. Aygun, R. Barfield, K. Eisenman, J. Fulbright, K. Garvey, L. Kersun, A. Nageswara Rao, A. Reilly, M. Sharma, E. Shereck, M. Wang, T. Watt and P. Leavey | 2015 Pediatric Blood and Cancer |
| Identifying professional characteristics of the ideal medical doctor: The laddering technique | S. Miles, S. J. Leinster | 2010 Medical teacher |
| Implementation of a Needs-Based, Online Feedback Tool for Anesthesia Residents With Subsequent Mapping of the Feedback to the ACGME Milestones | P. Tanaka, S. Bereknyei Merrell, K. Walker, J. Zocca, L. Scotto, A. L. Bogetz and A. Macario | 2017 Anesthesia & Analgesia |
| Implementation of peer review into a physical medicine and rehabilitation program and its effect on professionalism | J. Bonder, D. Elwood, J. Heckman, A. Pantel and A. Moroz | 2010 PM&R |
| Implementing a Narrative Medicine Curriculum During the Internship Year: An Internal Medicine Residency Program Experience | T. Wesley, D. Hamer and G. Karam | 2018 The Permanente journal |
| Improving professionalism: making the implicit more explicit | B. D. Joyner and V. M. Vemulakonda | 2007 The Journal of urology |
| Improving surgical residents’ performance on written assessments of cultural competency | A. Krajewski, C. Rader, A. Voytovich, W. E. Longo, R. A. Kozol and R. Y. Chandawarkar | 2008 Journal of surgical education |
| Incorporating palliative care into primary care education. National Consensus Conference on Medical Education for Care Near the End of Life | S. D. Block, G. M. Bernier, L. M. Crawley, S. Farber, D. Kuhl, W. Nelson, J. O'Donnell, L. Sandy and W. Ury | 1998 Journal of general internal medicine |
| Incorporating professionalism into medical education: the Mayo Clinic experience | P. S. Mueller | 2009 The Keio journal of medicine |
| Initial use of a novel instrument to measure professionalism in surgical residents | P. G. Gauger; L. D. Gruppen; R. M. Minter; L. M. Colletti; D. T. Stern | 2005 The American Journal of Surgery |
| Introducing the Professional-ism Mini—Evaluation Exercise (P-MEX) in Japan: Results from a multicenter, cross-sectional study | S. Ohbu; R. Cruess; S. Cruess; T. Okubo, T sugawa Y , T akahashi O | 1822 Academic Medicine |
| MAP-IT program to enhance professionalism in pathology residency training | S. Roychoudhury and M. J. Esposito | 2017 Academic Pathology |
| Mapping the Balint groups to the Accreditation Council for Graduate Medical Education family medicine competencies | A. Lichtenstein, J. Antoun, C. Rule, K. Knowlton and J. Sternlieb | 2018 The International Journal of Psychiatry in Medicine |
| No. | Title                                                                 | Authors                                                                 | Year | Journal                                                                 |
|-----|----------------------------------------------------------------------|-------------------------------------------------------------------------|------|-------------------------------------------------------------------------|
| 62  | Objective Structured Video Examinations (OSVEs) for geriatrics education | D. Simpson; R. Helm; T. Drewniak; M. M. Ziebert; D. Brown; J. Mitchell; N. Havas; K. Denson; S. Gehl; D. Kerwin; D. S. A. Bragg; S. Denson; M. Gleason Heffron; H. H. Harsch; E. H. Duthie | 2006 | Gerontology & geriatrics education                                        |
| 63  | Observation, reflection, and reinforcement: surgery faculty members' and residents' perceptions of how they learned professionalism | J. Park, S. I. Woodrow, R. K. Reznick, J. Beales, and H. M. MacRae     | 2010 | Academic Medicine                                                        |
| 64  | Occupational physicians' perceived value of evidence-based medicine intervention in enhancing their professional performance | N. I. R. Hugenholtz, F. G. Schaafsma, J. F. Schreinemakers, F. J. H. van Dijk and K. Nieuwenhuijsen | 2008 | Scandinavian Journal of Work, Environment and Health                      |
| 65  | On reflection: doctors learning to care for people who are dying       | R. D. MacLeod                                                          | 2001 | Social Science & Medicine                                                |
| 66  | Operationalizing professionalism: a meaningful and practical integration for resident education | B. G. Nichols, L. M. Nichols, D. M. Poetker, and M. E. Stadler       | 2014 | The Laryngoscope                                                        |
| 67  | Organisational strategies to cultivate professional values and behaviours | A. T. Cunningham, E. C. Bernabeo, D. B. Wolfson, C. S. Lesser         | 2011 | BMJ quality & safety                                                    |
| 68  | Pathology, professionalism, portfolios and progress: A phenomenological study of professional identity formation in pathology, and the development of an educational model to promote professionalism | W. M. Pryor                                                            | 2010 | University of Sydney                                                    |
| 69  | Personal growth during internship: a qualitative analysis of interns' responses to key questions | R. B. Levine; P. Haidet; D. E. Kern; B. W. Beasley; L. Bensinger; D. W. Brady; T. Gress; J. Hughes; A. Marwaha; J. Nelson; S. M. Wright | 2006 | Journal of general internal medicine                                    |
| 70  | Physician professional behaviour affects outcomes: A framework for teaching professionalism during anesthesia residency | W. Bahaziq and E. Crosby                                               | 2011 | Canadian Journal of Anesthesia                                           |
| 71  | Portfolios in continuing medical education—effective and efficient?   | N. J. Mathers; M. C. Challis; A. C. Howe; N. J. Field                | 1999 | Medical Education                                                        |
| 72  | Preceptors’ understanding and use of role modeling to develop the CanMEDS competencies in residents | L. Côté, P. Laughrea                                                   | 2014 | Academic Medicine                                                        |
| 73  | Professionalism and Communication Education in Pediatric Critical Care Medicine: The Learner Perspective | D. A. Turner, G. M. Fleming, M. Winkler, K. J. Lee, M. F. Hamilton, C. P. Hurnik, T. Petruillo-Albarano, K. Mason and R. Mink | 2015 | Academic pediatrics                                                      |
| 74  | Professionalism and maintenance of certification: using vignettes describing interpersonal dilemmas to stimulate reflection and learning | E. C. Bernabeo, S. G. Reddy, S. Ginsburg and E. S. Holmboe           | 2014 | Journal of Continuing Education in the Health Professions               |
| 75  | Professionalism and non-technical skills in Radiology in the UK: a review of the national curriculum | F. Daley, D. Bister, S. Markless and P. Set                           | 2018 | BMC research notes                                                      |
| 76  | Professionalism in obstetrics-gynecology residency education: the view of program directors | M. H. Fries                                                            | 2000 | Obstetrics & Gynecology                                                 |
| Page | Title                                                                 | Authors                                                                 | Year | Journal                                           |
|------|----------------------------------------------------------------------|------------------------------------------------------------------------|------|---------------------------------------------------|
| 77   | Promoting success: a professional development coaching program for interns in medicine | K. Palamara, C. Kauffman, V. E. Stone, H. Bazari, K. Donelan             | 2015 | Journal of Graduate Medical Education             |
| 78   | Reflection as a Learning Tool in Graduate Medical Education: A Systematic Review | A. F. Winkel, S. Yingling, A. A. Jones and J. Nicholson                 | 2017 | Journal of Graduate Medical Education             |
| 79   | Reflective Practice: Assessing Its Effectiveness to Teach Professionalism in a Radiology Residency | J. W. Kung, P. J. Slanetz, G. C. Huang and R. L. Eisenberg              | 2015 | Academic Radiology                                |
| 80   | Reliability of the physical medicine and rehabilitation resident observation and competency assessment tool: a multi-institution study | D. W. Musick; W. L. Bockenek; T. L. Massagli; M. A. Miknevich; K. R. Poduri; J. A. Sliwa; M. Steiner | 2010 | American journal of physical medicine & rehabilitation |
| 81   | Resident Self-Assessment and Learning Goal Development: Evaluation of Resident-Reported Competence and Future Goals | S. T. T. Li, D. A. Paterniti, D. J. Tancredi, A. E. Burke, R. F. Trimm, A. Guillot, S. Guralnick and J. D. Mahan | 2015 | Academic Pediatrics                              |
| 82   | Resident-generated versus instructor-generated cases in ethics and professionalism training | A.A. Kon                                                               | 2006 | Philosophy, Ethics, and Humanities in Medicine    |
| 83   | Residents' perceptions of professionalism in training and practice: barriers, promoters, and duty hour requirements | N. Ratanawongsa; S. Bolen; E. E. Howell; D. E. Kern; S. D. Sisson; D. Larriviere | 2006 | Journal of general internal medicine             |
| 84   | Role modeling humanistic behavior: learning bedside manner from the experts | P. F. Weissmann, W. T. Branch, C. F. Gracey, P. Haidet and R. M. Frankel | 2006 | Academic Medicine                                |
| 85   | Role modeling: A precious heritage in medical education               | A. Mirhaghi, H. K. Moonaghi, S. Sharafi and A. E. Zeydi                 | 2015 | Acta Facultatis Medicae Naissensi                 |
| 86   | Self-assessment in the health professions: a reformulation and research agenda | K. W. Eva; G. Regehr                                                  | 2005 | Academic medicine                                |
| 87   | Serving as a physician role model for a diverse population of medical learners | S. M. Wright; J. A. Carrese                                           | 2003 | Academic Medicine                                |
| 88   | Sometimes you can't make it on your own: the impact of a professionalism curriculum on the attitudes, knowledge, and behaviors of an academic plastic surgery practice | C.S. Hultman, E. G. Halvorson, D. Kaye, R. Helgans, M. O. Meyers, P. A. Rowland, A. A. Meyer | 2013 | Journal of surgical research                     |
| 89   | Stimulating preventive procedures in primary care. Effect of PIUPOZ program on the delivery of preventive procedures | E. Gowin, D. Avonts, W. Horst-Sikorska, J. Dytfeld and M. Michalak      | 2012 | Archives of Medical Science                       |
| 90   | Student and resident perspectives on professionalism: beliefs, challenges, and suggested teaching strategies | S. Miranda, A. Abraham, S. Hudkins, J. Emily, B. Klug, L. Kathy, A. DH. Monroe | 2014 | International journal of medical education        |
| 91   | Teaching and assessing professionalism in ophthalmology residency training programs | A. G. Lee, H. A. Beaver, H. C. Boldt, R. Olson, T. A. Oetting, M. Abramoff and K. Carter | 2007 | Survey of ophthalmology                          |
| 92   | Teaching and assessment of ethics and professionalism: a survey of pediatric program directors | A. F. Cook, S. A. Sobotka and L. F. Ross                               | 2015 | Academic Pediatrics                              |
| Supplemental Digital Content: Teo, et al. A modified Delphi approach to nurturing professionalism in postgraduate medical education in Singapore. Singapore Med J |
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| 93 | Teaching and evaluating professionalism for anesthesiology residents | I. Dorotta; J. Staszak; A. Takla; J. E. Tetzlaff | 2006 Medical teacher |
| 94 | Teaching approaches that reflect and promote professionalism | C. J. Hatem | 2003 Academic Medicine |
| 95 | Teaching professional and humanistic values: suggestion for a practical and theoretical model | W. T. Branch | 2015 Patient education and counseling |
| 96 | Teaching professionalism to junior doctors: experience of a multidisciplinary approach in the Foundation Programme | M. G. Masding, W. McConnell and C. Lewis | 2009 Clinical medicine |
| 97 | Teaching professionalism to residents | E. Klein, J. C. Jackson, L. Kratz, E.K. Marcuse, H.A. McPhillips, R.P. Shugerman, S. Watkins, F. B. Stapleton | 2003 Academic Medicine |
| 98 | The developing physician—becoming a professional | D. T. Stern, M. Papadakis | 2006 New England Journal of Medicine |
| 99 | The expected results of faculty development programs in medical professionalism from the viewpoint of medical education experts | N. Yamani, M. Shakour and A. Yousefi | 2016 Journal of Research in Medical Sciences |
| 100 | The Heroic and the Villainous: a qualitative study characterising the role models that shaped senior doctors' professional identity | K. Foster and C. Roberts | 2016 BMC medical education |
| 101 | The impact of facilitation of small-group discussions of psychosocial topics in medicine on faculty growth and development | A. K. Kumagai, C. B. White, P. T. Ross, R. L. Perlman, J. C. Fantone | 2008 Academic medicine |
| 102 | The informal curriculum: what do junior doctors learn from a palliative care rotation? | C. H. Poi, H. S. Khoo, Y. H. M. Koh and A. H. Y. Mei | 2018 BMJ supportive & palliative care |
| 103 | The majority of accredited continuing professional development activities do not target clinical behavior change | F. Légaré, A. Freitas, P. Thompson-Leduc, F. Borduas, F. Luconi, A. Boucher, H. O. Witteman and A. Jacques | 2015 Academic Medicine |
| 104 | The path to professionalism: cultivating humanistic values and attitudes in residency training | K. M. Markakis; H. B. Beckman; A. L. Suchman; R. M. Frankel | 2000 Academic medicine |
| 105 | The patient panel conference experience: what patients can teach our residents about competency issues | C. Y. Colbert, C. Mirkes, C. T. Cable, S. J. Sibbitt, G. O. VanZyl, P. E. Ogden | 2009 Academic Medicine |
| 106 | The patient-physician relationship. Teaching the human dimensions of care in clinical settings | W. T. Branch; D. Kern; P. Haidet; P. Weissmann; C. F. Gracey; G. Mitchell; T. Inui | 2001 JAMA |
| 107 | The positive role of professionalism and ethics training in medical education: a comparison of medical student and resident perspectives | L. W. Roberts; K. A. Green Hammond; C. M. A. Geppert; T. D. Warner | 2004 Academic Psychiatry |
| 108 | The professionalism curriculum as a cultural change agent in surgical residency education | M. S. Hochberg, R. S. Berman, A. L. Kalet, S. R. Zabar, C. Gillespie and H. L. Pachter | 2012 The American Journal of Surgery |
| Page | Title                                                                                       | Authors                                                                                     | Publication Year | Journal                                      |
|------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------|----------------------------------------------|
| 109  | The professionalism disconnect: do entering residents identify yet participate in unprofessional behaviors? | A. Nagler, K. Andolsek, M. Rudd, R. Sloane, D. Musick and L. Basnight                      | 2014             | BMC medical education                        |
| 110  | Through the looking glass: How reflective learning influences the development of young faculty members | S. Higgins, L. Bernstein, K. Manning, J. Schneider, A. Kho, E. Brownfield, and W. T. Branch Jr | 2011             | Teaching and Learning in Medicine            |
| 111  | Transformative professional development of physicians as educators: assessment of a model     | E. G. Armstrong, J. Doyle and N. L. Bennett                                                 | 2003             | Academic Medicine                           |
| 112  | Transforming practice organizations to foster lifelong learning and commitment to medical professionalism | D. M. Frankford, M. A. Patterson and T. R. Konrad                                        | 2000             | Academic Medicine                           |
| 113  | Twelve tips on teaching and learning humanism in medical education                          | L. G. Cohen and Y. A. Sherif                                                              | 2014             | Medical teacher                             |
| 114  | Understanding, teaching and assessing the elements of the CanMEDS Professional Role: canadian program directors' views | A. E. Warren, V. M. Allen, F. Bergin, L. Hazelton, P. Alexiadis-Brown, K. Lightfoot, J. McSweeney, J. F. Singleton, J. Sargeant and K. Mann | 2014             | Medical teacher                             |
| 115  | Using the morbidity and mortality conference to teach and assess the ACGME General Competencies | J. C. Rosenfeld                                                                           | 2005             | Current Surgery                             |
| 116  | Young physicians' recall about pediatric training in ethics and professionalism and its practical utility | A. F. Cook and L. F. Ross                                                               | 2013             | The Journal of Pediatrics                   |
| 117  | Common Ground: Frameworks for Teaching Improvisational Ability in Medical Education        | Belinda Fu                                                                                 | 2019             | TEACHING AND LEARNING IN MEDICINE            |
| 118  | Does a socially-accountable curriculum transform health professional students into competent, work-ready graduates? A cross-sectional study of three medical schools across three countries | Torres Woolley, Amy Clithero-Eridon, Salwa Elsanousi & Abu-Bakr Othman                      | 2019             | medical teacher                             |
| 119  | Guided Self-Assessment and Action Plans: What Do Residents Need to Succeed?               | Lori R. Berkowitz1,2 & Natasha R. Johnson1,3 & Sharon Muret-Wagstaff4                     | 2019             | Springer                                    |
| 120  | how to Foster Professional Values during Pathology Residency                              | Yong-Jin Kim                                                                               | 2019             | Journal of Pathology and Translational Medicine |
| 121  | Humanistic medicine in anaesthesiology: development and assessment of a curriculum in humanism for postgraduate anaesthesiology trainees | Cecilia Canales1,2,* , Suzanne Strom1, Cynthia T. Anderson1, Michelle A. Fortier3, Maxime Cannesson4, Joseph B. Rinehart1, Zeev N. Kain1,4 and Danielle Perret1,5 | 2019             | British Journal of Anaesthesia               |
| 122  | Key stakeholder opinions for a national learner education handover                         | Aliya Kassam , Mariela Ruetalo , Maureen Topps , Margo Mountjoy , Mark Walton , Susan Edwards and Leslie Nickell2 | 2019             | BMC Medical Education                       |
| Page | Title                                                                 | Authors                                                                 | Year | Journal                        |
|------|----------------------------------------------------------------------|------------------------------------------------------------------------|------|-------------------------------|
| 123  | Optimizing the Learning and Working Environment for Radiology Residents | Seth Stalcup, MD, Rebecca Leddy, MD, Jeanne Hill, MD, Madelene Lewis, MD | 2019 | Academic Radiology             |
| 124  | Teaching Professionalism in Postgraduate Medical Education: A Systematic Review | Berger Arielle S. MD; Niedra Elizabeth MD; Brooks Stephanie G.; Ahmed Waleed S. MD; Ginsburg Shihra MD, PhD | 2019 | Academic Medicine             |
### Table S4: Nurturing professionalism curriculum framework questionnaire and responses

| Section and items                                                                 | Proportion of participants who indicated that the item should be included | Included/ excluded in the new curriculum |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------|
| **1. Communication and Challenging Scenarios:**                                     |                                                                           |                                         |
| Communication with patients (verbal)                                               | 100.00%                                                                   | Included                                |
| Communication with patients (non-verbal skills, including bedside manners)          | 100.00%                                                                   | Included                                |
| Conflict management with patients                                                  | 100.00%                                                                   | Included                                |
| Breaking bad news to patients                                                      | 83.33%                                                                   | Included                                |
| Addressing end-of-life issues with patients and family                            | 83.33%                                                                   | Included                                |
| Taking informed consent from the patient or relevant stakeholders                 | 100.00%                                                                   | Included                                |
| Communication with the interprofessional healthcare team                           | 100.00%                                                                   | Included                                |
| Conflict management within the healthcare team                                     | 100.00%                                                                   | Included                                |
| **2. Ethics and Legal issues:**                                                     |                                                                           |                                         |
| Fundamental code and principles of professional ethics                              | 100.00%                                                                   | Included                                |
| Ethical and legal considerations related to mental capacity                        | 100.00%                                                                   | Included                                |
| Ethical and legal considerations related to informed consent                       | 100.00%                                                                   | Included                                |
| Ethical and legal considerations related to the delivery of bad news               | 100.00%                                                                   | Included                                |
| Unsolicited medical opinion                                                        | 66.67%                                                                   | Excluded                                |
| Ethics of whistleblowing within the organisation                                   | 66.67%                                                                   | Excluded                                |
| Publication and research ethics                                                     | 100.00%                                                                   | Included                                |
| Drug pricing                                                                      | 50.00%                                                                   | Excluded                                |
| Commercial conflicts of interest                                                   | 100.00%                                                                   | Included                                |
| **3. Professional Attributes:**                                                     |                                                                           |                                         |
| Teamwork with other healthcare professionals                                       | 100.00%                                                                   | Included                                |
| Interdisciplinary respect                                                          | 83.33%                                                                   | Included                                |
| Coordination of care within the healthcare team                                     | 83.33%                                                                   | Included                                |
| Coordination of care with the patient and caregivers                              | 83.33%                                                                   | Included                                |
| Teamwork with patients as part of shared decision making                           | 100.00%                                                                   | Included                                |
| Working with patients who speak different languages                                | 50.00%                                                                   | Excluded                                |
| Working with healthcare staff who speak different languages                        | 33.33%                                                                   | Excluded                                |
| Interacting with patients from a different culture (how to be considerate and respectful) | 83.33%                                                                   | Included                                |
| Interacting with healthcare staff from a different culture (how to be considerate and respectful) | 83.33%                                                                   | Included                                |
| Admitting medical mistakes, professional integrity                                | 100.00%                                                                   | Included                                |
| Learning from medical mistakes                                                     | 100.00%                                                                   | Included                                |
| Leadership skills training                                                         | 66.67%                                                                   | Excluded                                |
| Situational awareness                                                             | 66.67%                                                                   | Excluded                                |
| Resource management | 50.00% | Excluded |
|---------------------|--------|----------|

### 4. Virtues:
- Compassion and empathy to patients: 100.00% Included
- Respect: 100.00% Included
- Excellence, continuous improvement: 100.00% Included
- Reliability and responsibility: 100.00% Included
- Implications of values in practice: 83.33% Included
- Knowledge of own limits: 100.00% Included
- Altruism: 83.33% Included
- Advocacy: 100.00% Included

### 5. Self-care and reflection:
- Self-directed learning: 83.33% Included
- Self-awareness in the moment, mindfulness: 100.00% Included
- Emotional regulation: 83.33% Included
- Responsibility to self: 100.00% Included
- Reflective exercises (act of doing reflection): goal setting, self-reflection, acknowledging achievements: 83.33% Included
- Admitting limitations: 100.00% Included
- Addressing depression and burnout: 100.00% Included
- Time management: 83.33% Included
- Self-care techniques: 100.00% Included
- Strategies to cope with stress: 100.00% Included

### 6. Teaching methods:
- Formally assigned mentor within the faculty to act as a role model: 66.67% Excluded
- Having a guideline of professional values and behaviours that the mentor can use for discussion with the learner/ lets the learner experience. Experience may be through informal opportunities or coordinated tutorials: 100.00% Included
- Recognition (eg. Awards) to commend exemplary behaviour demonstrating professionalism: 33.33% Excluded
- Workshop/seminars (on ‘professionalism topics’ in previous section): 100.00% Included
- Lectures on the expectations for professional behaviour: 66.67% Excluded
- Case-based discussions on what one would do as an individual: 100.00% Included
- Role playing scenarios: 83.33% Included
- Improvisation exercises and discussions: 83.33% Included
- Standardised patient (SP) exercises: 100.00% Included
- Portfolio that documents professional behaviour and participation in on-the-job experiences that build professionalism and reflection: 66.67% Excluded
- Team discussions about challenging social and ethical situations Multidisciplinary discussions to practice interprofessional communications: 83.33% Included

### 7. Assessment methods:
- Self assessment tools: 80.00% Included
- Personalised learning plans e.g. portfolio to encourage physicians to reflect and record their experiences: 80.00% Included
Regular evaluation of knowledge, skills, and attitude in the relevant domains of professionalism (stated above) e.g. through a professionalism evaluation form 60.00% Excluded

| 8. Institutional Support: |
|--------------------------|
| Allocate formal curriculum time for professionalism teachings 100.00% Included |
| Provide welfare support for all physicians 80.00% Included |
| Establish feedback portal where physicians can identify their learning gaps and request for more training 60.00% Excluded |
### Table S5. Finalised nurturing professionalism curriculum framework

| Section and items | Proportion of participants who indicated that the item should be included |
|-------------------|--------------------------------------------------------------------------|
| **1. Communication and Challenging Scenarios:** | |
| Communication with patients (verbal) | 100.00% |
| Communication with patients (non-verbal skills, including bedside manners) | 100.00% |
| Conflict management with patients | 100.00% |
| Breaking bad news to patients | 83.33% |
| Addressing end-of-life issues with patients and family | 83.33% |
| Taking informed consent from the patient or relevant stakeholders | 100.00% |
| Communication with the interprofessional healthcare team | 100.00% |
| Conflict management within the healthcare team | 100.00% |
| **2. Ethics and Legal issues:** | |
| Fundamental code and principles of professional ethics | 100.00% |
| Ethical and legal considerations related to mental capacity | 100.00% |
| Ethical and legal considerations related to informed consent | 100.00% |
| Ethical and legal considerations related to the delivery of bad news | 100.00% |
| Publication and research ethics | 100.00% |
| Commercial conflicts of interest | 100.00% |
| **3. Professional Attributes:** | |
| Teamwork with other healthcare professionals | 100.00% |
| Interdisciplinary respect | 83.33% |
| Coordination of care within the healthcare team | 83.33% |
| Coordination of care with the patient and caregivers | 83.33% |
| Teamwork with patients as part of shared decision making | 100.00% |
| Interacting with patients from a different culture (how to be considerate and respectful) | 83.33% |
| 4. Virtues:                  |
|-----------------------------|
| Compassion and empathy to patients | 100.00% |
| Respect                     | 100.00% |
| Excellence, continuous improvement | 100.00% |
| Reliability and responsibility | 100.00% |
| Implications of values in practice | 83.33% |
| Knowledge of own limits      | 100.00% |
| Altruism                    | 83.33%  |
| Advocacy                    | 100.00% |

| 5. Self-care and reflection: |
|-----------------------------|
| Self-directed learning       | 83.33%  |
| Self-awareness in the moment, mindfulness | 100.00% |
| Emotional regulation         | 83.33%  |
| Responsibility to self       | 100.00% |
| Reflective exercises (act of doing reflection): goal setting, self-reflection, acknowledging achievements | 83.33% |
| Admitting limitations        | 100.00% |
| Addressing depression and burnout | 100.00% |
| Time management              | 83.33%  |
| Self-care techniques         | 100.00% |
| Strategies to cope with stress | 100.00% |

| 6. Teaching methods:                  |
|--------------------------------------|
| Having a guideline of professional values and behaviours that the mentor can use for discussion with the learner/ lets the learner experience. Experience may be through informal opportunities or coordinated tutorials. | 100.00% |
| Workshop/seminars (on ‘professionalism topics’ in previous section) | 100.00% |
Case-based discussions on what one would do as an individual &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;100.00%
Role playing scenarios &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;83.33%
Improvisation exercises and discussions &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;83.33%
Standardised patient (SP) exercises &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;100.00%
Team discussions about challenging social and ethical situations &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;100.00%
Multidisciplinary discussions to practice interprofessional communications &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;83.33%

7. Assessment methods:
Self assessment tools &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;80.00%
Personalised learning plans e.g. portfolio to encourage physicians to reflect and record their experiences &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;80.00%

8. Institutional Support:
Allocate formal curriculum time for professionalism teachings &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;100.00%
Provide welfare support for all physicians &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;80.00%
APPENDIX 2

Professionalism Curriculum Development — Modified Delphi Survey

Overview
Using this online platform, we invite you to assess specific elements of prevailing professionalism curricula, and determine if these elements should warrant a place in a new and ideal professionalism curriculum program tailored specifically for the postgraduate medical setting. These will be rated using a single best-answer questionnaire.

*If you agree that the item should be included, please indicate 'Include'.
*If you disagree that the item should be included, please indicate 'Exclude'.
*If you have further comments specific to the item, please provide them in the Comments column.

Other suggestions or input would be very much welcomed. An opportunity will be given at the end of the survey page. Through your input, each item will be accorded a final score.

There are two important considerations during the modified Delphi process.
1. Balancing the number of items listed with what is deemed to be important and feasible in a professionalism curriculum program for doctors
2. Ensuring that there is enough depth to the item to capture the dynamic nature of professionalism

We look forward to your invaluable input. Please proceed to the next page for the modified Delphi survey. Thank you.
This section pertains to ‘Professionalism Topics’.

The following questions are derived from existing data of "professionalism topics". As a broad and dynamic field, professionalism involves numerous concepts and skills, some of which are interwoven with other ethical concepts. However, within this wide range of topics, some stand out more than others in terms of importance and relevance to everyday practice. Hence, it is pertinent to teach physicians these core skills through didactic and experiential teaching methods for them to become professional doctors.

In the section below, please indicate as to whether the following professionalism content topics should be included or excluded in an ideal professionalism curriculum program. Inclusion would mean deeming the topic important and deserving of time and resources for further teaching and/or nurturing.

1. Communication and Challenging Scenarios:

|                                | Include | Exclude |
|--------------------------------|---------|---------|
| Communication with patients    |         |         |
| (verbal)                       |         |         |
| Communication with patients    |         |         |
| (non-verbal skills, including  |         |         |
| bedside manners)               |         |         |
| Conflict management with       |         |         |
| patients                       |         |         |
| Breaking bad news to patients  |         |         |
| Addressing end-of-life issues  |         |         |
| with patients and family       |         |         |
| Taking informed consent from   |         |         |
| the patient or relevant        |         |         |
| stakeholders                    |         |         |
| Communication with the         |         |         |
| interprofessional healthcare    |         |         |
| team                           |         |         |
| Conflict management within the |         |         |
| healthcare team                |         |         |

Comments

2. Ethics and Legal issues:

|                                | Include | Exclude |
|--------------------------------|---------|---------|
| Fundamental code and principle |         |         |
| of professional ethics         |         |         |
| Ethical and legal considerations|         |         |
| related to mental capacity     |         |         |
| Ethical and legal considerations|         |         |
| related to informed consent    |         |         |
3. Professional Attributes:

| Include | Exclude |
|---------|---------|
| Teamwork with other healthcare professionals | |
| Interdisciplinary respect | |
| Coordination of care within the healthcare team | |
| Coordination of care with the patient and caregivers | |
| Teamwork with patients as part of shared decision making | |
| Working with patients who speak different languages | |
| Working with healthcare staff who speak different languages | |
| Interacting with patients from a different culture (how to be considerate and respectful) | |
| Interacting with healthcare staff from a different culture (how to be considerate and respectful) | |
| Admitting medical mistakes, professional integrity | |
| Learning from medical mistakes | |
| Leadership skills training | |
| Situational awareness | |
| Resource management | |
4. Virtues:

|                                | Include | Exclude |
|--------------------------------|---------|---------|
| Compassion and empathy to patients |         |         |
| Respect                        |         |         |
| Excellence, continuous improvement |       |         |
| Reliability and responsibility  |         |         |
| Implications of values in practice |     |         |
| Knowledge of own limits        |         |         |
| Altruism                       |         |         |
| Advocacy                       |         |         |

5. Self-care and reflection:

|                                                      | Include | Exclude |
|------------------------------------------------------|---------|---------|
| Self-directed learning                               |         |         |
| Self-awareness in the moment, mindfulness            |         |         |
| Emotional regulation                                 |         |         |
| Responsibility to self                               |         |         |
| Reflective exercises (act of doing reflection): goal setting, self-reflection, acknowledging achievements |   |         |
| Admitting limitations                                |         |         |
| Addressing depression and burnout                    |         |         |
| Time management                                      |         |         |
| Self-care techniques                                 |         |         |
| Strategies to cope with stress                       |         |         |

Comments

| Comments |
|----------|
6. What other topics do you think should be included?
This section pertains to ‘Teaching Methods’.

The following questions are derived from existing data of “teaching methods”. This refers to the avenues by which the professionalism topics are taught to the students.

In the section below, please indicate as to whether the following teaching methods should be included or excluded in an ideal professionalism curriculum program. Inclusion would mean deeming the teaching method important and deserving of time and resources to further develop and execute.

### 7. Teaching Methods

|                                                                 | Include | Exclude |
|-----------------------------------------------------------------|---------|---------|
| Formal assigned mentor within the faculty to act as a role model|         |         |
| Have a guideline of professional values and behaviours that the mentor can use for discussion with the learner/ lets the learner experience. Experience may be through informal opportunities or coordinated tutorials. |         |         |
| Recognition (eg. Awards) to commend exemplary behaviour demonstrating professionalism |         |         |
| Workshop/seminars (on ‘professionalism topics’ in previous section) |         |         |
| Lectures on the expectations for professional behaviour |         |         |
| Case-based discussions - what what would you do as an individual |         |         |
| Role playing scenarios |         |         |
| Improvisation exercises and discussions |         |         |
| Standardised patient (SP) exercises |         |         |
| Portfolio that documents professional behaviour and participation in on-the-job experiences that build professionalism and reflection |         |         |
| Team discussions about challenging social and ethical situations |         |         |
| Multidisciplinary discussions to practice interprofessional communications |         |         |
8. What other methods do you think should be included?

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
This section pertains to ‘Assessment Methods’.

The following questions are derived from existing data of "assessment methods". This refers to the methods by which professionalism may be assessed in physicians.

In the section below, please indicate as to whether the following assessment methods should be included or excluded in an ideal professionalism curriculum program. Inclusion would mean deeming the assessment method important and deserving of time and resources to further develop and execute.

9. Assessment Methods

| Assessment Methods                                                                 | Include | Exclude |
|-----------------------------------------------------------------------------------|---------|---------|
| Self assessment tools                                                             |         |         |
| Personalised learning plans e.g. portfolio to encourage physicians to reflect and record their experiences |         |         |
| Regular evaluation of knowledge, skills, and attitude in the relevant domains of professionalism (stated above) e.g. through a professionalism evaluation form |         |         |

Comments

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

10. What other assessment methods do you think should be included?

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

This section pertains to ‘Institutional Support.’
The following questions are derived from existing data of "support provided by the institution". This refers to areas where the faculty can lend support to facilitate the execution and success of the professionalism curriculum.

In the section below, please indicate as to whether the following forms of support from the institution should be included or excluded in an ideal professionalism curriculum program. Inclusion would mean deeming the form of institutional support important and deserving of time and resources to further develop and execute.

11. Institutional Support:

| Allocate formal curriculum time for professionalism teachings | Include | Exclude |
|---------------------------------------------------------------|---------|---------|
| Provide welfare support for all physicians                    |         |         |
| Feedback portal where physicians can identify their learning gaps and request for more training |         |         |

Comments

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

12. What other forms of institutional support do you think should be included?

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

Thank You