Differences in the Assessed Performance of Medical Interns in a Comparison of Competency-based and Subject-based Curricula: a Qualitative Study

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Differences in the assessed performance of medical interns in a comparison of competency-based and subject-based curricula: A qualitative study

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ABSTRACT

**Background:** An internship is a transitional training period a medical school graduate undertakes prior to attaining full registration as a medical doctor. Numerous studies have shone a light on the unpreparedness of medical school graduates for the realities of medical practice. Implementation of a competency-based curriculum (CBC) is thought to produce better prepared medical graduates because this curriculum is more structured and integrated; moreover, learning outcomes, the learning process, and assessment are better aligned in the cognitive, affective, and psychomotor domains. During 2006–2011, Indonesia conducted a nation-wide reform shifting to a CBC from a subject-based curriculum (SBC) and launched an internship program in 2013. This study aimed to compare the performances of medical interns training under these two different curricula.

**Methods:** This study was conducted in Yogyakarta Province, involving six supervisors and six interns from six different types of district hospitals. Qualitative, semi-structured interview methods, and thematic analysis were applied.

**Results:** In total, 1,296 initial codings were identified and grouped under the following topics: overall experience (327), effective communication (97), scientific foundation (47), clinical skills (48), information management (23), management of health problems (194), self-insight and professional development (351), and professionalism (209). Eighteen themes emerged, namely understanding the internship, authority, practice context, interprofessional communication, patient communication, cultural awareness in communication, gap and fulfillment in clinical skills, knowledge gap and enhanced knowledge, assumption of a General Practitioner role, progression to proficiency, information literacy, internal motivation, learning opportunities, constructive feedback, transition, and working culture. There were irregular patterns of performance from both of the CBC and SBC interns. Interestingly, compared with the SBC
group, the CBC group revealed less confidence and assertiveness in handling patients. This group also lacked communication skills when interacting with nurses and patients alike. Moreover, the SBC group demonstrated the ability to learn and adapt quickly to the working environment. Neither group paid much attention to information literacy.

**Conclusion:** We cannot conclude that a CBC would yield better prepared medical graduates. The results of this study showed irregular patterns in eight areas. Hospital contexts and variation in the characters of interns might have contributed to this irregularity. More exposure to the working context and greater contributions from the healthcare system are recommended in the medical curriculum, whether it be a CBC or a SBC. WC:338

**Keywords:** internship, competence-based curriculum, subject-based curriculum, medical school, professional training
BACKGROUND

In many countries, especially those following the United Kingdom (UK) system, internships are part of the training program medical students must undertake before they can apply for registration as medical doctors. An internship is defined as the period of work-based learning or practical training that follows medical school (1). In these countries, the internship is perceived as the transition period from medical student to junior doctor. It can be considered as formal or informal training, or part of postgraduate training, and is a critical stage in the progression of a doctor’s career (2). This transition is discerned as a major challenge, particularly in terms of the increased responsibility and workload, as well as increased professional contact with other healthcare workers and patients (3).

In this period, new medical graduates are confronted with the realities of the clinical workplace, which require them to evolve from supervised interns to independent practitioners. A number of studies have been conducted investigating this evolutionary process from various perspectives. A study in Germany showed that many junior doctors were not adequately prepared for their upcoming careers (4). This finding was confirmed by research from various countries, indicating that this transition is frequently considered stressful. In addition to the unpreparedness, poor support, and limited education, a number of factors contributing to this stressful experience have been identified in new medical graduates entering clinical practice (5). A study in the UK reported a higher prevalence of burnout syndrome during the second semester of the internship. Students who conducted their internships in public hospitals demonstrated higher scores on emotional fatigue and depersonalization than those who performed their internships in private hospitals (6). Another study drew the conclusion that the transition from medical student to clinician does not necessarily have to be signaled by stress and mental fatigue but may provide a fruitful
opportunity for interns to grow into their roles as medical doctors if they are provided with extensive support and guidance (7).

To overcome the unpreparedness of medical graduates, many medical schools have reformed their curricula into competency-based or outcome-based curricula (8). The University of New South Wales (UNSW) in Australia evaluated its medical graduates three months into their internships. Medical graduates from a new outcome-based integrated program rated themselves as having good clinical and procedural skills, with ratings that indicated significantly greater capabilities than those of graduates of the previous UNSW content-based program (9). Another study demonstrated the strength of an outcome-based curriculum in its ability to produce competent students that are well prepared for their internships (10). Other investigations into preparedness in terms of clinical skills showed no significant differences between lecture-based and problem-based curricula in these metrics (11,12). Problem-based graduates rated themselves as better prepared in their “awareness of legal and ethical issues,” and lecture-based graduates rated themselves as better prepared in their “understanding of disease processes” (12). A study in Groningen Medical School in the Netherlands on the effect of implementing undergraduate competency-based medical education did not support the assumption that competency-based education results in medical graduates who are better prepared for medical practice (13).

In 2013, the Indonesian government launched an internship program for new medical graduates, which was decreed in the Medical Education Law, following the implementation of competency-based medical education enacted by the Indonesian Medical Council in 2006. Between 2006 and 2011, Indonesia initiated a nation-wide reform of the medical curriculum, while all medical schools were shifting from a subject-based curriculum (SBC) to a competency-based (CBC) curriculum. This was conducted under the assumption that the
medical internship would produce better prepared medical graduates, who eventually would become proficient independent practitioners. This study aimed to determine the differences in medical interns’ performance based on their curricular background, namely CBC and SBC.

METHODS

1. Context

This study was conducted in Yogyakarta Special Province, because it was among the first of the Indonesian provinces to adopt the medical internship program. At the provincial level, the Health Office of the Yogyakarta Provincial Government organizes the program, which consists of recruitments, placements to district hospitals and community health centers, as well as an induction program for the medical interns. Most of the medical graduates who apply in Yogyakarta Province come from the three medical schools located in Yogyakarta. In line with the enactment of the Standards of Medical Doctors’ Competencies in 2006, the Faculty of Medicine Universitas Gadjah Mada in Yogyakarta was the first in Indonesia to implement CBC on a full scale in 2007. At the time of the study, there were interns who had already graduated from the CBC in 2014–2015.

2. Study Design

This was a qualitative study using semi-structured interviews aimed at evaluating the performance of medical interns in seven areas of competency as described in the Standards of Medical Doctors’ Competencies in 2006, namely effective communication, clinical skills, scientific foundation of medicine, management of health problems, information technology, self-insight and personal development, and professionalism. The phenomenon under
investigation is the performance of interns as it reflects their transition from competency to
proficiency during the internship program as perceived by the supervisors and their interns.

3. Study Participants

To achieve maximum sampling variation, participants were recruited from six different types
of hospitals: three public district hospitals from three different districts, one district military
hospital, one district police hospital, and one private hospital. Six medical interns from the
Faculty of Medicine Universitas Gadjah Mada were recruited, from both CBC and non-CBC.
Six supervisors who supervised these medical interns were recruited from the six hospitals.
In total, there were 12 interviewees, three medical interns from batches 2007 and 2008 who
experienced CBC and three medical interns from batches 2005 and 2006 who experienced the
old SBC, and six intern supervisors who supervised the interns. Recruiting the interns and
their supervisors who worked together in the same hospital could increase the study’s validity
through data triangulation, since both sources of responses referred to the same hospital
context.

4. Data Analysis

Thematic analysis was applied in this research because it is especially suitable for
systematically identifying, organizing and suggesting insights into patterns of meaning
(themes) across a data set, which allows researchers to make sense of the collective meaning
and experiences. The purpose is to identify relevant themes to answer particular research
questions, which can be performed both inductively and deductively. A six-step approach to
thematic analysis was applied, namely (i) familiarization with the data, (ii) generation of
initial codes, (iii) search for themes, (iv) review of potential themes, (v) definition and naming
of themes, and (6) production of a report (14).
For the in-depth interviews, once completed, the responses were immediately transcribed by the transcriber. The interviewer, who was part of the research team, would check and identify the initial coding and themes. To strengthen the results’ trustworthiness and consistency, member-checking was applied. Three persons (namely, the interviewer, the principal researcher, and the expert who was not member of the research team) conducted the initial codings. Each person conducted the initial codings independently. Then, the principal investigator thoroughly read the results of the initial codings and sorted them in accordance with the interview questions using color codes. The initial codings with the same color codes were assembled into a table to list the relevant topics. After reading the initial codings several times and attempting to identify the underlying meanings, the principal investigator constructed potential themes for each question from the CBC and SBC groups’ responses.

RESULTS

There were 233 pages of transcripts from six supervisors and six medical interns, and 658 initial codings from supervisors and 734 initial codings from medical interns were identified. The initial codings were grouped according to the interview topics. Table 1 shows the sums of the initial codings for each of the topics from supervisors and medical interns grouped into CBC and SBC. Potential themes were identified on the basis of initial codings for each interview topic for supervisors and medical interns. After being reviewed and contextualized in several iterations, potential themes with similar meanings or referring to the same situations were further combined into a final theme, as demonstrated in Table 1.

Table 1. Number of initial codings for each interview topic from supervisors and medical interns

<table>
<thead>
<tr>
<th>Interview topics</th>
<th>Initial codings from Supervisors</th>
<th>Initial codings for Medical Interns</th>
</tr>
</thead>
</table>
According to the above table, supervisors in the CBC group gave more explanations than those in the SBC group and provided more enlightenment on professionalism, whereas medical interns from the SBC group gave more descriptions than those in the CBC group and preferred to talk more about their experiences as interns and their personal development.

Based on all initial codings identified from the supervisors and interns (total number of responses = 1,296), 18 themes from all topics were developed, as depicted in Table 2.

<table>
<thead>
<tr>
<th>Interview topics</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall experience</td>
<td>Understanding the internship</td>
</tr>
<tr>
<td></td>
<td>Authority</td>
</tr>
<tr>
<td></td>
<td>Practice context</td>
</tr>
<tr>
<td>Effective communication</td>
<td>Interprofessional communication</td>
</tr>
<tr>
<td></td>
<td>Patient communication</td>
</tr>
<tr>
<td></td>
<td>Cultural awareness in communication</td>
</tr>
<tr>
<td>Clinical skills</td>
<td>Gap</td>
</tr>
<tr>
<td></td>
<td>Fulfillment</td>
</tr>
<tr>
<td>Scientific foundation</td>
<td>Knowledge gap</td>
</tr>
<tr>
<td></td>
<td>Enhanced knowledge</td>
</tr>
<tr>
<td>Management of health problems</td>
<td>Assume a GP role</td>
</tr>
</tbody>
</table>

CBC: competency-based curriculum; SBC: subject-based curriculum
Overall Experience

With regards to the overall experience, medical interns spoke more than supervisors. Medical interns from SBC expressed their overall experience more often than those from CBC. Three themes emerged from this topic: understanding the internship, authority, and practice context. The CBC group perceived the internship as a period for new medical graduates to become proficient and independent, whereas the SBC group considered the internship as an opportunity to apply medical knowledge and skills directly to patients, but under supervision. Concerning authority, the CBC group shared that medical interns were given full authority to practice as General Practitioners (GPs). However, the SBC group judged that, although interns already had medical degrees, they only had three-quarters of the responsibility, and the rest was held by the supervisors. For the practice context, the CBC group considered the total number of patients in a hospital important: If there is a small number of patients, then that hospital cannot be used for the internship program. The SBC group observed that, in practice, basic clinical procedures were conducted mostly by nurses, and every doctor had the authority to prescribe medication. Interns only had to adhere to the protocols. According to the response patterns, the SBC group perceived the internship as a continuation of the clinical rotation with additional responsibilities, whereas the CBC group understood the internship as a workplace where interns worked as GPs with full
responsibility. Table 3 shows some of the excerpts concerning the interns’ overall experience with the topic’s three related themes.

Table 3. Excerpts for overall experiences

<table>
<thead>
<tr>
<th>Competency-based curriculum</th>
<th>Subject-based curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understanding internship</strong></td>
<td></td>
</tr>
<tr>
<td>RPI page 1 paragraph 2</td>
<td>RI4 page 2 paragraph 12</td>
</tr>
<tr>
<td>So, the purpose of internship is to prepare for the working as a GP later. It is expected, the interns become more proficient and independent.</td>
<td>...it is the first time I applied my knowledge and skill from medical education. We could apply directly to the patient, but under supervision.</td>
</tr>
<tr>
<td><strong>Authority</strong></td>
<td></td>
</tr>
<tr>
<td>RPI page 1 paragraph 2</td>
<td>RI3 page 4 paragraph 22</td>
</tr>
<tr>
<td>...interns are given freedom to perform clinical procedures in line with the GP competences.</td>
<td>...the interns’ responsibility around ¾...the other ¼ when we consulted...</td>
</tr>
<tr>
<td><strong>Practice context</strong></td>
<td></td>
</tr>
<tr>
<td>RIS Page 16 paragraph 60</td>
<td>RP4 page 12 paragraph 44</td>
</tr>
<tr>
<td>...there are hospitals with small number of cases; in fact, they could not be used for internship.</td>
<td>...in this hospital, basic clinical procedures are done by the nurses...</td>
</tr>
</tbody>
</table>

225

**Effective Communication**

226 Three other themes emerged under effective communication, namely interprofessional communication, patient communication, and cultural awareness in communication. With regards to interprofessional communication, both groups responded that there were communication problems between interns and with respect to certain characteristics of nurses. The interns concluded that, in the end, what matters most in practice is interprofessional communication, because they will always be working with other professions.
The CBC group opined that patient communication needed improvement, especially in terms of how to show patients respect. CBC supervisors reported how CBC medical interns sometimes blamed patients or showed less empathy. CBC interns argued that they felt some lack of empathy with patients because, during their medical education, they practiced communication with probandus or simulated patients, whereas during their internship, they were realistically encountering dying patients and family members who had lost their loved ones, who were very emotional. They admitted that they were confused about how to respond to these situations. CBC supervisors explained that they had already tried to role model how to be more engaging with patients, such as hugging patients or touching or holding their hands. SBC supervisors expressed that SBC interns’ engagement with patients was sufficient. There were no complaints from patients about medical interns. Medical interns admitted that they learned quickly how to communicate with patients during the internship, despite having only practiced with simulated patients in medical school.

For cultural awareness, CBC interns explained that practicing with simulated patients was not sufficient to understand the diversity of the patients’ cultural backgrounds, whereas when the SBC interns were faced with cultural issues, they tended to be quiet at the beginning while observing the behavior of other health professions and the house doctors. Gradually, they adopted those behaviors. The following excerpts (Table 4) reflect these accounts.

<table>
<thead>
<tr>
<th>Competence-based curriculum</th>
<th>Subject-based curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interprofessional communication</td>
<td>Interprofessional communication</td>
</tr>
<tr>
<td>RP2 page 7 paragraph 40</td>
<td>RP4 page 9 paragraph 29–32</td>
</tr>
<tr>
<td>…misunderstanding with the nurses…</td>
<td>…there are complaints regarding communication between house doctors and internship, nurses and internship….</td>
</tr>
<tr>
<td>RP2 page 25 paragraph 196</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Excerpts for effective communication
…most important in the wards is communication with nurse and specialists.

**Patient communication**

RP3 page 21 paragraph 106

…interns need to improve their communication, especially how to respect patients…

RP6 page 3 paragraph 14

….interns’ communication with patients are good…

R15 page 4 paragraph 10

…for example…when a patient was in severe abdominal pain…the intern would comment: ‘of course, you had an abdominal pain, it was very painful’…In my opinion, this was not an empathic comment from a medical doctor.

RP5 page 7 paragraph 36

…no complaints about the interns’ communication, there were no problems regarding this.

R14 page 6 paragraph 26

Our communication skill improved significantly. We could communicate directly with patients, with medical colleagues. We had good communication with them.

RP5 page 7 paragraph 28

When I practiced communication with simulated patients, we knew that this was a simulation, so we could not bring out our emotion and empathy. But, when we were interns, we were exposed directly with a coma patient due to accidents. The family cried, all sorts of emotions appeared. This situation could not be found in the simulated situation.

R15 page 4 paragraph 14

I observed the medical stuff and the nurses here are not ready to handle patients’ complaints, especially in the wards. They tended to blame the patients or showed less empathy. For example, a patient complaining of abdominal pain. The nurse just said—of course you are a sick person, you must experience pain.

**Cultural awareness in communication**

R15 page 9 paragraph 31-32

When we practiced communication skills with simulated patients, it was difficult to make it real, patients with various cultural background.

RP4 page 8 paragraph 28

…at first, the interns chose to be silent and observed…as the passage of time they became more confident to deal with culturally difficult patients

254

**Clinical Skills**

255 Regarding clinical skills, two themes were identified, namely the clinical skills gap and fulfillment. For the first, both CBC supervisors and interns admitted that medical graduates needed to practice their clinical skills more because, in medical schools, they were at the point of “only having practiced the required clinical skills once.” The CBC interns admitted that in
medical schools, they lacked the opportunities to apply their clinical skills directly to patients.

A SBC medical intern expressed that the stitching procedures used in the hospital were not compliant with the standard procedures.

The second theme was fulfillment, indicating how medical interns could close this gap. The CBC group explained that medical interns were given the authority to handle patients on their own from the beginning, including anamnesis, physical examinations, and suggesting supporting examinations. The SBC supervisors explained that some medical interns at first were not able to perform wound stitching nor write medical prescriptions, but during the internship, the supervisors taught them, and eventually they could perform both functions. The SBC interns also mentioned that, because they were already a medical doctor, they were more respected by other health professionals and house doctors, and thus they felt that they had more freedom to apply their competencies to patients. This sentiment is echoed in the following excerpts in Table 5.

Table 5. Excerpt for clinical skills

<table>
<thead>
<tr>
<th>Competence-based curriculum</th>
<th>Subject-based curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical skills gap</td>
<td></td>
</tr>
<tr>
<td>RI2 page13 paragraph 159</td>
<td>RI6 page 5 paragraph 16</td>
</tr>
<tr>
<td>During medical education, we learnt basic clinical skills in the skills lab, but we rarely used them afterwards.</td>
<td>I found in the reality, not all medical procedures are complied with. Such as in suturing, sterilization is not done properly. This was different when we practiced in the skills lab.</td>
</tr>
<tr>
<td>RI2 page13 paragraph 398</td>
<td></td>
</tr>
<tr>
<td>I think, we lacked the repeated practices for clinical skills.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fulfillment</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI2 page 15 paragraph 190</td>
</tr>
<tr>
<td>Internship give me chances to handle the patients directly, from anamneses, physical examinations, laboratory and other supporting examinations. This helps me to integrate the clinical skills and become more proficient.</td>
</tr>
<tr>
<td>RI3 page 16 paragraph 71</td>
</tr>
<tr>
<td>In internship, we are respected as a full medical doctor, therefore we have more discretions. When we did our clinical rotation, we were considered as disturbances in the health care...because we had no clear roles and responsibilities.</td>
</tr>
</tbody>
</table>
Knowledge gap and enhanced knowledge were two themes identified within this topic. This knowledge gap shows that the CBC interns lacked knowledge of social health insurance. A CBC supervisor confirmed that, since the social health insurance program was enacted to provide universal coverage for the whole population in Indonesia, knowledge and understanding of its claim procedures have been very important because this is what many patients are most concerned about nowadays. For the SBC group, during their internship, this social health insurance program had not yet existed. What concerned the SBC group was knowing and understanding patients’ condition holistically, not just their presenting signs and symptoms. The CBC group explained they had detailed clinical knowledge, but this did not automatically support them in dealing with patients.

For the enhanced knowledge, exposure to a variety of cases during the internship, including dealing with medicolegal aspects, improved their medical knowledge. The SBC interns revealed that only the clinical knowledge was useful. Biomedical knowledge—especially biomolecular knowledge—was not needed that much, and only the pathophysiology helped in dealing with patients. The following excerpts (Table 6) illustrate this topic and its two related themes.

<table>
<thead>
<tr>
<th>Competence-based curriculum</th>
<th>Subject-based curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge gap</td>
<td></td>
</tr>
<tr>
<td>RI2 page 36 paragraph 5–6</td>
<td>RP5 page 12 paragraph 73</td>
</tr>
<tr>
<td>...with social insurance for health, the procedures are complicated, we need to know what conditions are covered and not...whether this is an emergency or not.....</td>
<td>...interns need to recognize the patients and understand their condition.</td>
</tr>
<tr>
<td>RP2 page 22 paragraph 164</td>
<td>RP5 page 13 paragraph 74</td>
</tr>
<tr>
<td></td>
<td>The interns should know and understand patients’ conditions, but they just copy paste the logbook.</td>
</tr>
</tbody>
</table>
...when we asked the interns about particular diseases, they could answer. But when they applied to patients, it was not good...

---

Enhanced knowledge

<table>
<thead>
<tr>
<th>RP1 page 3 paragraph 18</th>
<th>RI4 page 12 paragraph 54</th>
</tr>
</thead>
<tbody>
<tr>
<td>...there are surgical, non-surgical, child, adult, geriatry, mental health, medicolegal...the interns handle a variety of cases.</td>
<td>....during internship, clinical sciences are most used and strengthened, then pathophysiology to understand disease mechanism; but biomolecular is not relevant.</td>
</tr>
</tbody>
</table>

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Management of Health Problems

For management of health problems, two themes were also identified. The first was “to assume a GP’s role.” Both supervisors from CBC and SBC explained that the medical interns were given the responsibilities to assume a GP’s role. They examined the patients from the beginning and wrote down all the findings in their medical records, including the treatment given. The interns had discretion to determine when they needed to consult with the specialists. Interns from both groups confirmed this and added that they also had a responsibility to deliver promotions during placement in community health centers. The second theme was “progression toward proficiency.” Interns from both groups confirmed that the internship improved them with proficiency in patient management. Although, there were some obstacles, such as new protocols in district hospitals, and basic medical procedures, such as suturing, which are the tasks of the nurses as illustrated in the following excerpts in Table 7.

Table 7. Excerpts for management of health problems

<table>
<thead>
<tr>
<th>Competence-based curriculum</th>
<th>Subject-based curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assume a GP role</td>
<td></td>
</tr>
<tr>
<td>RP2 page 7 paragraph 40</td>
<td>R13 page 16 paragraph 70</td>
</tr>
</tbody>
</table>
...in the ward, interns must recognize emergency cases, when they could handle on their own and when to consult to specialist.

Our supervisors were very good. We felt comfortable. They gave discretion to us, but they still monitored and checked before the treatment was delivered.

RI2 page 7 paragraph 82

...we are given discretion to examine the patients from the beginning and complete the medical records.

R16 page 17 paragraph 46

We did health promotion when we were placed in community health centre.

One of our compulsory tasks is to do health promotion in the community health centre, we have to many villages.

RI2 page 167 paragraph 13

RI1 page 4 paragraph 30–34

In the ward, we have to consult with the specialist. But in community health centre, we could handle ourselves.

RP5 page 13 paragraph 74–76

...must be held responsible, during internship they must learn that they are no longer students.

RP3 page 23 paragraph 166

Writing prescription needs to be improved, including the dosage, and how to administer the drug....I asked them to learn again.

RP6 page 4 paragraph 16–18

...their clinical decision making is good, and are able to handle patients on their own.

Information Management Skills

The one theme that emerged in this topic was medical record literacy, which describes the extent to which interns understand how to complete medical records and how to use them.

Interns from both groups explained that they understood how to complete the medical records but lacked perspectives on how to make use of them.

Self-Insight and Personal Development

With regards to this topic, three themes were identified, namely internal motivation, learning opportunities, and constructive feedback. Both groups—interns and supervisors—agreed on how internships would enhance the interns’ competencies depending on their internal motivations. Interns who were serious about using every opportunity to improve their
competencies would achieve more, but those who lacked the internal drive tended to be passive and missed many chances to learn. The second theme was learning opportunities. While interns are regarded as a full GP with their own professional discretion and responsibilities, the hospitals, house doctors, and other health professionals offered them unlimited learning opportunities. Both supervisors from CBC and SBC groups confessed that they monitored how the interns performed from a distance. With regards to constructive feedback, the CBC group explained that feedback was given both formally and informally. To avoid embarrassment, constructive feedback was purposefully given after the intern had finished interacting with the patient. SBC interns explained that they felt the logbook was not useful. The supervisors were focused on giving feedback related to the cases, rather than on the interns’ performance (such as communication or clinical skills). CBC interns highlighted that compatibility between interns and their supervisors affected the success of the supervisory process. The following excerpts (Table 8) portray this topic and the three related themes.

Table 8. Excerpts for self-insight and personal development

<table>
<thead>
<tr>
<th>Competence-based curriculum</th>
<th>Subject-based curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal motivation</strong></td>
<td></td>
</tr>
<tr>
<td>RP1 page 18 paragraph 120</td>
<td>RP4 page 8 paragraph 26</td>
</tr>
<tr>
<td>As supervisors, we could not force the interns. It is up to them how they self-assess their ability.</td>
<td>The seriousness, the willingness and the interest of each intern are different.</td>
</tr>
<tr>
<td>RP1 page 3 paragraph 68–71</td>
<td>RP4 page 12 paragraph 44</td>
</tr>
<tr>
<td>For clinical skills, the interns must be eager to try and practice. At the beginning, they are scared to try…</td>
<td>To what extent interns make use of the opportunities to advance their competencies, knowledge and skill depend on interns’ initiative and motivation.</td>
</tr>
<tr>
<td><strong>Learning opportunities</strong></td>
<td></td>
</tr>
<tr>
<td>RP1 page 1 paragraph 2</td>
<td>RPS page 10 paragraph 58</td>
</tr>
<tr>
<td>Interns are given full discretion to perform GP duties, however opportunities to increase their proficiency are wide open.</td>
<td>In the hospitals, the basic clinical procedures are performed by the nurses; although the interns know the theories. So, they learn from the nurses to improve their proficiency.</td>
</tr>
</tbody>
</table>
There were two themes for the topic of professionalism, namely transition and working culture. Both groups confirmed that, at the beginning, the interns were required to make adjustments within the work environment in the hospitals. They needed to increase their speed and accuracy when examining patients. After completing the internship, most interns had increased their professionalism. However, CBC supervisors expressed their concerns that their interns were frightened to handle the patients directly, lacked the ability to build rapport with patients, and lacked confidence and prowess in decision making. Therefore, at the beginning, CBC interns needed more intensive supervision, and gradually, by the end of the program, they had gained confidence and courage in handling patients independently. SBC supervisors did not report such situations. They observed that SBC interns demonstrated a sense of responsibility in handling patients.

On the theme of working culture, CBC interns expressed worry about their ability to build relationships with colleagues and other health professionals, as well as concerns over
discrepancy between the ideal situation and the practical one, which imposed an ethical dilemma. In contrast, the SBC interns explained that, in real work environments, emotions were involved when dealing with patients as well as when building relationships with colleagues. Such aspects were not found when they practiced laboratory skills or conducted clinical rotations. Cultural differences also affected how they handled relationships with patients and colleagues. Table 9 shows the excerpts for this topic and its two related themes.

### Table 9. Excerpts for professionalism

<table>
<thead>
<tr>
<th>Competence-based curriculum</th>
<th>Subject-based curriculum</th>
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</thead>
<tbody>
<tr>
<td><strong>Transition</strong></td>
<td></td>
</tr>
<tr>
<td>RP3 page 3 paragraph 69–71</td>
<td>P 3 p paragraph 16</td>
</tr>
<tr>
<td>...the interns are scared to handle the patients on their own even after a while some are still scared.</td>
<td>Ability for decision making of interns is good, the communication is also good.</td>
</tr>
<tr>
<td>RP3 page 18 paragraph 95</td>
<td>RI3 P5 paragraph 28</td>
</tr>
<tr>
<td>...I told them: when you speak with patients is not like that, you need to relax the patients by behaving as their friends.</td>
<td>During internship, professional behavior is challenging, because we handle the patients with all their emotions. As time goes by, we becomes more mature.</td>
</tr>
<tr>
<td>RP3 page3 paragraph 14</td>
<td>RI6 P 18 paragraph 50</td>
</tr>
<tr>
<td>Compared to the previous intern, they had the same level of knowledge. But, I was confused why the current interns are getting less confidence, less courageous, and less adeptness.</td>
<td>When we were medical students in clinical rotation, our main target was to pass the exam. But now, our target is to heal the patients. Our sense of responsibility to the patients emerges.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Working culture</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RP3 p20 paragraph 105</td>
<td>RP5 P3–4 paragraph 16–18</td>
</tr>
<tr>
<td>The interns must have a courage to take the risks, but they are not. They are cry babies, they do not have resilience, they want to get things easily.</td>
<td>We emphasize that interns should have good teamwork and cohesion, and give positive responses.</td>
</tr>
<tr>
<td>Rp2P7 paragraph 40–42</td>
<td>RI6P 8 paragraph 24</td>
</tr>
<tr>
<td>Conflicts with nurses due to different expectations...building relationships with medical specialist, with nurses, with midwives...need time and effort to adjust. This varies among interns, around 1–2 months.</td>
<td>Because we are given responsibility to handle patients, we have to be professional.</td>
</tr>
<tr>
<td></td>
<td>R16P 11 paragraph 30</td>
</tr>
<tr>
<td></td>
<td>Senior nurses are dominant to perform basic clinical procedures, like suturing. At times, the interns are given</td>
</tr>
</tbody>
</table>
We are faced with ethical dilemma when we see unstandardized practices. Do we have to be consistent or to lower the standards so that we are accepted by our working environment.

Senior staffs, either in district hospitals or in community health centres tend to dominate.

DISCUSSION

Our assumption that CBC would perform better in all aspects of areas of competence are not supported by these qualitative findings. This is in line with the findings from a study in Groningen in the Netherlands, which also claimed that their findings could not bear the assumption that a CBC would yield better prepared graduates (13). In contrast, a study in the UK yielded a different result concerning the effect of implementing a CBC in medical education on perceived preparedness for practice. Between 1998 and 2006, all UK medical schools reformed their curriculum to a CBC. Within each cohort, a significantly higher percentage of the respondents from schools with the CBC felt well prepared. Some of the improvement might be explicable to the curricular changes (15).

In this study, we obtained surprising results on the topics of effective communication, clinical skills, health management, and professionalism. We expected that CBC interns would demonstrate better performance in these areas because CBC has a more structured and better designed curriculum for communication and clinical skills, as well as a new skills laboratory provided with improved clinical skills equipment. However, the findings were to the contrary.
A study in Kenya showed comparable results: they discovered a consensus across subjects on deficiencies in interns’ clinical skills and experience of handling clinical problems. Supervisors in general provided critical comments regarding interns’ competencies, whereas interns showed more concerns about their weaknesses. Supervisors expected better performance on surgical procedures than how interns anticipated to. Perception of medical graduates’ unpreparedness seemed to be caused by a failure to apply the apprenticeship model in medical school and insufficient exposure to district hospitals prior to graduation (15). Another study in the UK investigated the induction process as a solution to improving interns’ preparedness. It was discovered that the induction program was more useful when conducted at the beginning than in later rotations, and longer inductions were preferable to shorter ones. When interns were placed in clinical departments, medical interns lacked proper inductions, particularly regarding their roles and responsibilities in particular departments, including where to find equipment and documents, who to contact and how to contact them, as well as local preferences, policies and procedures (16). In this study, the induction was performed twice. The first time was in the District Health Office regarding the internship program, and the second was in an orientation that each hospital gave to new interns. However, the induction was performed as a one-way lecture. Therefore, some interns had ethical dilemmas when they experienced that the suturing procedures were not the same as the procedures they practiced in the skills laboratory.

Brennan et al. studied the transition of medical students to junior doctors at the Peninsula Foundation School in the UK. They discovered that although curriculum reforms had been conducted, most participants still perceived that the transition was pressured. Coping with their freshly attained responsibility, surviving uncertainty, dealing with multi-professional teams, encountering the sudden death of patients, and feeling unsupported were important themes. However, the stress of transition could be lessened by the level of clinical
experience obtained during their undergraduate years. They suggested that medical schools need to ensure that students are given prior exposure to clinical environments that allow for continuing “meaningful” contact with patients and increasing opportunities to assume a role as junior doctor, even as students (17). This study confirms Brennan’s findings. Also, in Indonesia, the new CBC structured the clinical rotation into defined activities, such as clinical tutorials, bedside teaching, etc. During their clinical rotation, medical students had fewer opportunities to take full responsibility for patients, causing them to feel unprepared for their responsibilities in their internships. The interns confirmed that they studied the patients in fragmented sequences, and their major concern had been how to pass the exams, rather than fully learning the process of patient management.

Lempp et al. studied teamwork and support among interns in the Pre-Registration House Officer (PRHO) program. Most PRHOs described having positive experiences during their involvement as full members of their first ward teams. This furnished them with increasing confidence and competence in this early period of career transition. However, a number of organizational barriers were pinpointed, e.g., incomplete teams and shift work, which produced problems in their integration (18). In this study, both interns from CBC and SBC confirmed that teamwork among interns could run well, although there were variations in interns’ characters and habits. However, teamwork with nurses did not always run smoothly. They found that different expectations and the dominance of nurses hindered the teamwork. Concerning support from supervisors and the hospitals, they had positive impressions. The learning opportunities given by the supervisors and the hospitals were immense; some interns seriously responded to these opportunities, while others were more relaxed.
For the management of health problems, CBC interns lacked confidence and courage compared with SBC interns. Both interns believed themselves to have sufficient knowledge and clinical skills, but CBC interns experienced more difficulties with patient management, whereas SBC interns had more confidence handling patients. This might be due to a more structured clinical rotation in CBC, which reduces the authenticity of the clinical environment. This finding confirmed the results of the study by Prince et al. that junior doctors discerned confidence with regard to knowledge and skills but encountered difficulties with patient management, practical matters, and their role in the interprofessional medical team (3).

In a study conducted by Sturman et al. in the University of Queensland Medical School involving 15 interviews, participants described the intern transition as physically, mentally, and emotionally fatiguing. They had to cope with long days, administrative and clinical tasks, frequent interruptions, and time pressures; identify priorities; deal with criticism without compromising key relationships; communicate concisely; understand team roles (including their own status within hospital hierarchies); and negotiate conflict. Participants explained that they experienced a decrease in self-confidence and difficulty maintaining self-care and social relationships (19). These results substantiated the findings from this study that the CBC interns also experienced decreasing confidence and difficulty in communication with nurses and patients.

This study enriches the literature on the transition period for medical students to become proficient independent practitioners. Some findings corroborate previous studies. But, there were findings that are also contrary to expectations concerning CBC. Some limitations of this study were the small number of subjects and only one province was included. A larger scale study should be performed in the future, involving more provinces, district hospitals, and community health centers with a wider context.
CONCLUSIONS

The findings of this study revealed irregular patterns between CBC and SBC interns in their overall experience and seven areas of competencies, namely effective communication, clinical skills, scientific foundation, management of health problems, information management skill, self-insight and personal development, and professionalism. We could not conclude that a competency-based medical curriculum better prepared medical graduates for internship. However, the irregularities revealed that students’ preparedness for professional practice was different, and so were the expectations from supervisors. This study provides qualitative evidence that the interns’ performances reflect a variety of responses to the hospital context and their experiences during the clinical rotation. SBC interns showed more confidence and courage in the handling of patients, compared with CBC interns. This might be attributed to the fact that, in the old SBC, the clinical rotation was less structured, and students had more opportunities to experience directly the wide variety of the district hospital environments used for the internship program. Accordingly, medical schools need to place medical students for a longer period in several district hospitals during their clinical rotation, rather than to concentrate the clinical rotation in the main top referral teaching hospitals. Additionally, it is recommended that more learning opportunities be provided to handle patients comprehensively under tighter supervision. This will allow a gradual transition.

LIST OF ABBREVIATIONS

CBC: competencies-based curriculum
GP: general practitioners
SBC: subject-based curriculum
ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

The medical interns and the supervisors were contacted individually and were explained about the research. Upon agreement of participation, they were invited to the Department of Medical Education at Faculty of Medicine Universitas Gadjah Mada on an agreed date. They were given a written guidelines for the interview and further explained the details of the qualitative interview which were conducted by one researcher and one transcriber who recorded the interviews in the closed room. After they understood the research protocol and agreed to participate, we asked them to sign the written informed consent. All the interviewees completed the informed consent.

I declare that this qualitative research has been reviewed by the Institutional Review Board under the Medical and Health Research Ethics Committee (MHREC) of Faculty of Medicine in accordance with the institutional guidelines. After fulfilling the ethical approval procedures, the Ethical Clearance was granted by the Medical and Health Research Ethics Committee (MHREC) of the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada and Dr Sardjito Hospital with the issuance of Ethical Clearance Letter No. KE/FK/526/EC/2016.

CONSENT FOR PUBLICATION

Not applicable

AVAILABILITY OF DATA AND MATERIALS

Transcripts and data are available upon request, by contacting the corresponding author (titi.savitri@ugm.ac.id or +6281328780180). On behalf of all authors, I confirm that all methods were carried out in accordance with relevant guidelines and regulations.

COMPETING INTERESTS

The authors declare that they have no competing interests related to this study.
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AUTHORS’ CONTRIBUTIONS

Titi Savitri Prihatiningsih: wrote the proposal, conducted qualitative interviews, conducted initial and final coding, analyzed themes, wrote the manuscript and reviewed the final manuscript.

Prattama Santoso Utomo: assisted in writing the proposal, conducted qualitative interviews, conducted initial coding, and reviewed the manuscript.

Hikmawati Nurrokhmanti: conducted initial coding, and reviewed the manuscript.

Mora Claramita: conducted interviews, and reviewed the manuscript.

Albert Scherpier: reviewed the manuscript.

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