Competencies gap of management teams in primary health care

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Background: Health workforce competencies are considered crucial for attaining high-quality health care in the current market principles approach to the provision of health services. This study explored the competencies and the perceived competence gap of management personnel in public primary healthcare. Methods: During 2007 and 2008, 14 management teams of Belgrade primary health-care centres were questioned before and after management training in six competency categories. Competency mean differences (95% confidence interval) by gender, educational level, experience and position were analysed by Leven, Snedecor or Welch statistics, and Student’s t-test for comparison of two independent samples. Mixed Model Analysis clarified possible interactions of the managers’ baseline characteristics and competency task ratings. Differences between team ratings were analysed by analysis of variance (ANOVA) or the Kruskal–Wallis test. The General Linear Model Repeated Measures Analysis determined interactions and competency gap changes. Differences were statistically significant at P ≤ 0.05. Results: Female managers developed higher competency levels after training in communication skills and problem solving. Top managers rated assessing performance of higher importance, while chief nurses emphasized the importance of leading. Before training, the estimated competency gap was generally the highest in assessing performance (6.29), followed by team building (5.81) and planning and priority setting (5.70). Five months after training, the highest gap remained in assessing performance, although it was reduced considerably to 3.18 (P<0.0005). Conclusions: Managers rated core competencies as highly important. The reduction in competency gaps can be significant through training. However, assessing performance remained a relatively high weakness among managers.

Keywords: competencies gap, health management, health workforce, management training, Serbia

Introduction

Over the last several years, there has been increasing international emphasis on the measurement of competencies and performance in health care.¹ Health organizations, finding themselves in a demanding environment, are seeking greater creativity and productivity to scale up their services.² Organizations are known to be the most complex entities to manage.³

Health service managers play a critical role in the smooth running of the organization, and are publicly responsible for hundreds of employees, facilities and equipment worth millions of euros and for the quality of health-care services.⁴–¹⁵

Health managers address the managerial competence gap head-on.¹⁶ Competencies are the right combination of knowledge, skills and behaviours possessed by individuals¹⁷–¹⁹ and may be a source of sustained competitive advantage for the organization.⁵,¹⁰ The common management competency matrix consists of core intellectual and practical managerial competencies, such as communication, team building, planning and priority setting, assessing performance, problem solving and leading.¹⁸,¹⁹ As managerial competencies are job-related, they cannot be measured directly or in isolation of a context. Health-care management performance as a whole is open to measurement on an ongoing basis and reflects what health managers actually do.¹⁴ Measuring managerial competencies is important for continual quality of health-care improvement, identification and dissemination of best management practices, and the proper design of health management training.

Health service management is a knowledge- and skills-based process in which intensive learning is an important resource. Around 120 management training tools/modules have been developed in the last 15 years by the World Health Organization alone.⁷ Many countries are facing the challenge of modifying their health-care administration in order to meet changes in professional standards of care and correspond to patient demands.⁸,¹²–¹⁵,¹⁰ Without formal management education, however, many health managers fail to develop the knowledge and skills essential to competently address problems in relation to productivity, expenditures, accessibility and quality of care, or expectations of patients.²¹,²² In Serbia, a middle-income country in southeastern Europe, the shift from a planned to a market economy has driven health-care reforms since 2000.²³ However, there is still little
competition among health-care providers, and the manager’s ability to improve efficiency and to reward better productivity, quality of care or health outcomes is constrained. Incentives are set by ranking primary health-care centres according to quality of care, to be facilitated by the per capita payment system presently being piloted. According to a World Bank report, primary health-care centres in Serbia have substantially different levels of productivity (e.g. in number of consultations and diagnostic tests performed per equipment). Furthermore, performance variations that were found at the level of staff, medical equipment, space and fixed costs were determined mainly by differences in their organization and management, and, to some extent, by the age/gender structure of the reference population. The remaining challenge, therefore, was to explore the potential of competency development in such an environment.

Among the many tools that lead to higher organizational performance, education/training is used to build up core managerial competencies. Both educational institutions and health workers have shown considerable interest in different forms of health management training. Education is most commonly evaluated towards functional and applied knowledge, while learner self-assessment may add information crucial for customizing training. However, publications of their evaluations are still in short supply.

With respect to the importance of strengthening management at the primary health-care level and the fact that the Ministry of Health of Serbia has transferred the jurisdiction over primary health-care institutions to municipality authorities, we decided to study competencies and the perceived competence gap of management personnel in public primary health-care centres in Belgrade, the capital of Serbia. The objective was to examine what health-care managers perceive as important and relevant in order to achieve desired levels of performance, and to quantify the perceived gap between required and actual managerial competencies, before and after training for management improvement.

Methods

The research was conducted during 2007 and 2008 as part of the joint project of the School of Medicine of the University of Belgrade and the City Secretariat for Health Care of Belgrade (The Programme for Management Improvement of Primary Health Care Institutions of Belgrade). The criterion for inclusion in the study was that teams had not had any kind of health management education in the last year (e.g. workshops, seminars or studies). All 16 management teams of primary health-care centres in Belgrade were asked to participate. Two teams did not meet the criterion since they were already included in the Balkans Primary Health Care Policy Project. Before and after health management training, 14 management teams were investigated. They represent 87% of such institutions in Belgrade and 12% in the country. Selected teams were multidisciplinary and consisted of six to seven members: the top managers (all physicians), the assistant managers/heads of service (e.g. physicians or/and lawyers, engineers and economists) and chief nurses.

The project began with manager competency needs assessment. Assessment results were used to design training and supervision so that each management team had a long-term strategy, a business case plan and an implementation plan for total quality management of the work process at the end of the project. Furthermore, project findings contributed to the development of the primary health-care strategy in Belgrade.

The training consisted of four modules that targeted the development of particular competencies. The module on Basic Health Management and Strategic Positioning focused on developing skills in communication, team building, planning and priority setting and leading. The intent of the Business Planning and Social Marketing module was to develop skills in planning and priority setting, assessing performance and communication. The Health Information and Contemporary Management module was aimed at developing skills in planning and priority setting, and assessing organizational and health workforce performance. The Total Quality Management module focused on developing skills in problem solving, planning and priority setting and assessing performance. A multidisciplinary team of university lecturers with long-term experience in managerial positions (physicians, public health specialists, mathematicians, health economists and engineers) provided training and supervision. Certification with two European Credits Transfer Systems (ECTSs) was provided through full attendance and examination for all participants.

Supervision visits were tailored to the scores of the management teams and examination results. The purpose was to continue with specific competency improvement by on-the-job training (project management, change management and media communications) and public discussion regarding their strategic, business and total quality management plans. The invited public audience in public discussions consisted entirely of interested employees and organizational board members from the community, apart from management teams.

The research instrument was a culturally adapted questionnaire, developed originally by the Sustainable Management Development Program of the Centres for Disease Control and Prevention (CDC/SMDP). Questionnaire consisted of two parts. In the first part, participants were asked to provide personal and job-related data, and to describe whether there were opportunities to fully utilize their knowledge and skills, and to state any missing preconditions. The second part consisted of 22 questions about six core management competencies: communication, team building, planning and priority setting, assessing performance, problem solving and leading (Supplementary file 1). These questions address two components of each core management task: (i) individuals’ perception of the importance of a task for their management position, and (ii) their perceived level of knowledge and skills to perform the task. In the questionnaire, there was also the possibility to insert additional competency issues.

On a five-point Likert scale, the task importance ranged from 1 (not important) to 5 (very important), while the level of knowledge and skills ranged from 1 (no skills) to 5 (very high skills). Before the training, the questionnaires were distributed to participants with a cover letter referring to the training programme of the project. Five months after the training, the procedure was repeated. To assure matching, apart from respondents’ identification, the questionnaire administered after the training was almost identical with the questionnaire distributed before. However, it was necessary to add some new questions to evaluate the utility of the training modules after their application on site. The competency gap between the perceived importance and the actual competence levels of managers was calculated for each of the six core competencies by the formula:

\[ G = I^2 - KS^2 \]

where \( G \) represents the competence gap, \( I \) represents the rate of the perceived importance of the core competencies and \( KS \) represents the
represents the self-assessed actual level of knowledge and skills for the required management tasks.

Before training, the competency gap formula was used to identify needs and to customize learning objectives. To evaluate learning effects, the gap was calculated again after the training.

Data analysis consisted of descriptive statistics [means and 95% confidence intervals (CIs of managers’ ratings)], and analytical statistics. The post-entry exclusion bias was eliminated with exploration of differences of dropout participants. The Levene (L) statistic was used to test the homogeneity of group variance. If equal variances were assumed, the Snedecor (F) statistic was conducted; if variances were assumed not to be equal, the Welch (W) statistic was run to test the group means equality of managers’ task ratings with regard to their job positions. Student’s t-test for comparison of two independent samples was applied to test differences between variables: gender, educational level, years of experience and managers’ competence ratings. Mixed Model Analysis was used to clarify effects and possible interactions of the managers’ baseline characteristics and competency task ratings. Interaction effects were tested in a General Linear Model Repeated Measures Analysis for the manager’s core competencies gap change before and after training.

The differences in task ratings between teams were analysed by analysis of variance (ANOVA) or the Kruskal–Wallis test. If equal variances were assumed (based on the Levene test), ANOVA was conducted; if variances were assumed not to be equal, the Kruskal–Wallis test was run to test the differences in management team ratings with regard to the competency task. The results were considered statistically significant when the P-value was ≤0.05. Statistical analysis was performed with SPSS Statistics 17.0 (SPSS Inc., Chicago, IL, USA).

Results

All 14 teams completed the training and questionnaires; however, the response rate was lower in the second questionnaire than in the first questionnaire. The values of Cronbach’s alpha represented moderate-to-high levels (0.70–0.90) of the questionnaire’s internal consistency (Supplementary file 2 in Supplementary data).

Before training, there were 91 participants (six to seven respondents per team), and after training, there were 79 participants (three to six respondents per team). Each team consisted of one top manager (all physicians) and one chief nurse, and the remaining were assistant directors or heads of service (physicians or/and lawyers, economists and engineers). The 12 absent respondents (13%) were not accessible for various reasons, such as business trips, sick leave/hospitalization or transfer to another workplace. The baseline characteristics of the management teams before and after the training are shown in table 1. The study focus was on the data provided by 79 managers who completed both questionnaires, distributed before and after the training.

Perhaps the most important finding is the fact that scores on the test showed the readiness by the management teams to develop and self-appraise competencies, as to be individually and collectively a more successful health workforce. The data that proved there is a perceived competence gap that still exists after training but was significantly reduced for all competencies.

Before training, the only statistically significant differences between male and female ratings were for the importance of communication (3.74 vs. 4.40, respectively; L = 18.081, t = −2.691) and assessing performance (4.20 vs. 4.61, respectively; L = 6.747, t = −2.161). After training, the significant difference between male and female ratings remained for the importance of communication (4.03 vs. 4.42, respectively; L = 1.024, t = −2.368), and emerged for competence in problem solving (both its importance (4.47 vs. 4.79, respectively; L = 1.443, t = −2.690) and the current level of knowledge and skills (4.14 vs. 4.49, respectively; L = 3.818, t = −2.457)).

There were no significant differences in ratings among managers with high (university) and secondary/college education levels before and after the training. Their ratings were high both for the importance of competencies (mean value > 3.5) and their own knowledge and skills (mean value > 4).

Years of experience in a managerial position did not generate significant differences before training. After training, however, less experienced managers gave higher ratings than more experienced managers for the importance of communication (4.58 vs. 4.24, respectively; L = 0.138, t = 2.217) and leading (4.84 vs. 4.51, respectively; L = 12.678, t = 3.076). This was also true for both the importance of assessing performance of employees (4.81 vs. 4.52, respectively; L = 6.180, t = 2.988) and their perceived level of knowledge and skills attained (4.45 vs. 4.15, respectively; L = 0.122, t = 2.160).

Before training, among managers at different job positions, the only significant differences were for the importance of assessing performance (L = 6.017, W = 10.77), team building

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before training</th>
<th></th>
<th>After training</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>100</td>
<td>79</td>
<td>100</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>20</td>
<td>22.0</td>
<td>17</td>
<td>21.5</td>
</tr>
<tr>
<td>Females</td>
<td>71</td>
<td>78.0</td>
<td>62</td>
<td>78.5</td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary and college</td>
<td>18</td>
<td>19.8</td>
<td>15</td>
<td>19.0</td>
</tr>
<tr>
<td>Higher level (university)</td>
<td>73</td>
<td>80.2</td>
<td>64</td>
<td>81.0</td>
</tr>
<tr>
<td>Years of managerial experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤1 year</td>
<td>23</td>
<td>29.1</td>
<td>23</td>
<td>29.1</td>
</tr>
<tr>
<td>&gt;1 year</td>
<td>56</td>
<td>70.9</td>
<td>56</td>
<td>70.9</td>
</tr>
<tr>
<td>Managerial position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top managers (all physicians)</td>
<td>15</td>
<td>16.5</td>
<td>14</td>
<td>17.7</td>
</tr>
<tr>
<td>Assistant managers/heads of service</td>
<td>62</td>
<td>68.1</td>
<td>52</td>
<td>65.8</td>
</tr>
<tr>
<td>Chief nurses</td>
<td>14</td>
<td>15.4</td>
<td>13</td>
<td>16.5</td>
</tr>
</tbody>
</table>
The top managers rated the importance of assessing performance and team building higher, while chief nurses emphasized the importance of leading.

After training, ratings for the importance of core competencies remained more or less unchanged, but the self-assessed knowledge and skills increased. Among managers, only top managers rated significantly higher the importance of communication ($L = 4.160$, $W = 5.548$) and assessing performance ($L = 0.983$, $F = 3.526$). Solely the interaction between gender and time induced significant changes in ratings of the tasks importance of communication ($P < 0.007$) and assessing performance ($P < 0.0018$).

Before training, gender determined the managers' ratings for the importance of communication ($P < 0.0005$) and team building ($P = 0.002$), while level of education defined the importance of problem solving ($P = 0.016$). In addition, managerial position determined managers' ratings for the importance of communication ($P = 0.023$), team building ($P = 0.021$), assessing performance ($P = 0.020$) and problem solving ($P = 0.011$). The interaction between managerial position and gender determined ratings for the importance of problem-solving tasks ($P = 0.042$). The same interaction, including level of knowledge and skills, influenced the ratings of leading ($P = 0.045$).

After training, managerial experience determined ratings of knowledge and skills level for communication tasks ($P = 0.048$) and assessing performance ($P = 0.007$), as well as ratings for the importance of leading tasks ($P = 0.036$). In addition, the interaction between managerial experience and gender determined ratings of knowledge and skills level for leading tasks ($P = 0.045$), while the interaction among managerial position, experience and gender influenced the ratings for the importance of problem-solving tasks ($P = 0.027$).

There were no significant differences among the 14 management teams' ratings before training (table 2). After training, the teams' ratings were similar only for the importance of problem-solving tasks, as were the ratings of the level of knowledge and skills for assessing performance.

After training, the overall competency gap identified before training was significantly reduced, $P < 0.0005$ (table 3). The lone interaction between gender and time induced significant changes in reductions of competency gaps in communication ($P < 0.002$) and assessing performance ($P < 0.0038$).

The highest competency gap recorded among male managers was for problem solving, while among female managers it was assessing performance (Supplementary file 3a and 3b in Supplementary data). Regardless of attained level of education, assessing performance was a weak managerial competency task (Supplementary file 3c and 3d in Supplementary data). Gap reductions were more obvious among managers with >1 year of managerial experience than for less experienced managers (Supplementary file 3e and 3f in Supplementary data). The highest gap was noted in assessing performance regardless of managers' years of experience. Leading was additional weak competency task among less experienced managers.

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**Table 2** Statistical analysis of the differences between management teams before and after training with respect to the perceived importance, and self-assessed knowledge and skills of six core competencies

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Importance (P-value)</th>
<th>Knowledge &amp; Skills (P-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td></td>
<td>Levene statistic</td>
<td>ANOVA Kruskal-Wallis test</td>
</tr>
<tr>
<td>Communication</td>
<td>0.010 / 0.627</td>
<td>0.020 / 0.010</td>
</tr>
<tr>
<td>Team building</td>
<td>0.135 / 0.999</td>
<td>0.000 / 0.003</td>
</tr>
<tr>
<td>Planning and priority setting</td>
<td>0.003 / 0.291</td>
<td>0.020 / 0.002</td>
</tr>
<tr>
<td>Assessing performance</td>
<td>0.079 / 0.600</td>
<td>0.000 / 0.004</td>
</tr>
<tr>
<td>Problem solving</td>
<td>0.014 / 0.409</td>
<td>0.000 / 0.004</td>
</tr>
<tr>
<td>Leading</td>
<td>0.004 / 0.313</td>
<td>0.022 / 0.003</td>
</tr>
</tbody>
</table>

Note: Differences were statistically significant at a $P < 0.05$.

**Table 3** Statistical analysis of the differences before and after the training as regards perceived importance, self-assessed knowledge and skills and competency gap of six core competencies

<table>
<thead>
<tr>
<th>Competencies (in general)</th>
<th>Importances ($I$)</th>
<th>Knowledge and skills ($KS$)</th>
<th>Competency gap analysis ($G = I - KS$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ratings (mean and 95% confidence interval)</td>
<td>GLM repeated measures ($t$ factor)</td>
<td>Ratings (mean and 95% confidence interval)</td>
</tr>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>$F$ statistic ($P$-value)</td>
</tr>
<tr>
<td>Communication</td>
<td>4.26 (4.10–4.41)</td>
<td>4.34 (4.20–4.48)</td>
<td>0.923 (0.340)</td>
</tr>
<tr>
<td>Team building</td>
<td>4.73 (4.64–4.83)</td>
<td>4.76 (4.65–4.87)</td>
<td>0.244 (0.623)</td>
</tr>
<tr>
<td>Planning and priority setting</td>
<td>4.59 (4.49–4.69)</td>
<td>4.63 (4.51–4.72)</td>
<td>0.440 (0.509)</td>
</tr>
<tr>
<td>Assessing performance</td>
<td>4.52 (4.40–4.65)</td>
<td>4.60 (4.50–4.71)</td>
<td>1.253 (0.266)</td>
</tr>
<tr>
<td>Problem solving</td>
<td>4.65 (4.55–4.75)</td>
<td>4.72 (4.62–4.82)</td>
<td>1.417 (0.237)</td>
</tr>
<tr>
<td>Leading</td>
<td>4.63 (4.51–4.75)</td>
<td>4.60 (4.47–4.74)</td>
<td>0.103 (0.749)</td>
</tr>
</tbody>
</table>
In general, reduction was achieved mainly due to improvements in leading and communication knowledge and skills, approximately by 78% and 68%, respectively. Before training, the general competency gap was estimated to be the highest in assessing performance (6.29), followed by team building (5.81) and planning and priority setting (5.70). After training, the highest gaps still were in assessing performance, although it was considerably reduced (from 6.29 to 3.18). The next highest gaps were found for problem solving at 2.74 (from 4.98 before training), and for planning and priority setting at 2.17 (from 5.70). All gaps determined were highly significant, as well as the improved knowledge and skill ratings. Medical top managers' and chief nurses' ratings of core competencies and gaps, as standard managerial positions, are presented in figures 1 and 2. The highest gap identified was in assessing performance for top managers (from 7.97 to 5.22), chief nurses (from 5.98 to 3.32) and assistant managers/head of services (from 5.98 to 2.63).

Figure 1 Core management competences of top managers (physicians): competence gap before and after training (the confetti pattern of radar indicates the area of improvement after training)

Figure 2 Core management competences of chief nurses: competence gap before and after training (the confetti pattern of radar indicates the area of improvement after training)
Discussion

The main finding of our study was a general reduction of the perceived competency gap among health management teams, suggesting that education was effective. Despite the overall large reduction of the competency gap, the persisting gap in assessing performance and problem solving can be explained by shortcomings in the training programme (e.g., participants commented ‘little time regarding the relevance of the topic’), and partly by the complexity of particular competencies. The perception of the importance of core competencies appears to be dependent on gender and years of experience apart from managerial position. Females valued more highly the competencies in communication and problem solving than did males, and less experienced managers perceived as more important communication, assessing performance and leading than did their more experienced counterparts. Fine and Omar et al.36,37 emphasize that managers with more years of experience and responsibility perceive higher levels of creative problem-solving skills as increasingly important and demanding.

The study had several limitations that may restrict the broader practical effects and generalization of results. This study reflected perceptions of almost all health managers of primary health-care centres in the capital of Serbia; therefore, caution must be taken when generalizing the findings to managers in other smaller cities and different settings. As in our study, in the workforce register of the Public Health Institute of Serbia, the majority of health managers are physicians and nurses (61% and 23%, respectively), and females (65%). The ‘self-assessment’ is likely to give an over- or under-stated estimate. In addition, any other reason in the meantime, e.g., policy/management interventions, could affect their perception. Indeed, due to obligatory annual reporting on quality in health care,23 workers’ expectations related to the introduction of capitation payment in primary care,24 and other developments in primary care settings in the Balkan countries,31 some management teams might have been motivated to think strategically and to improve their competencies.33 In addition, before the second questionnaire, investments in major accounting systems accomplished by specific training had been already underway for all primary health-care institutions.24 All of the above-mentioned factors might have significantly affected the managers’ ratings, and could explain the persistence of competency gaps. In order to minimize a possible bias in the assessment of perceptions, we undertook analysis of the competency gaps.

The study also has some political implications. It advocates the importance of assessing managers’ pre-existing competencies and their competency gap for designing and evaluating health management training. Determining the reduced competency gap and the identification of weak competencies in the study were built on ‘good practices’, such as setting pre- and post-competencies and competency gaps,17 peer training, ‘team learning’ and ‘learning-by-doing’ business and strategic plans for their own health-care centres.24 Further research should explore the root causes of weak performance assessment tasks and the ways to address the root causes in a structured approach.

Other research has also concluded that leadership, strategic planning, problem solving and communication were critical competencies for performance improvement, either at the individual or organizational level.15–17,20,21,26,38–40 Continuous improvement in these areas may result in health-care service optimization of resources and improvements of overall quality and health outcomes. Since competency development deals and evolves with wider organizational systems and changes in the roles of managers,2,8,39,40 we support the view that training alone is almost certain to be inadequate to assure the application of improved skills. Regulations and policy procedures on performance measurement purpose are necessary, as well as those that would oblige management staff to pass some form of continual management training at least once per year, and to undergo assessments and follow-ups tailored to the job specifications and work results. In addition, management teams should have a reasonably long mandate to implement developed action plans, and should agree to be ranked annually according to their individual or team performance appraisals (e.g., success in delivery of strategic or business plans), which will facilitate both team support and competition, and contribute to public accountability.

We suggest obligatory assessment of managerial competency needs prior to health management team training, and that this be tailored to follow-up ‘on the job’. To strengthen health management development, a policy should support health manager’s appraisals and certification. It is hoped that the study results and their relationship with health outcomes will assist policy makers in creating a predisposing, reinforcing and enabling work environment for health workers and in establishing health managers as workforce group per se.

Acknowledgements

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Conflicts of interest: None declared.

Key points

- The perceived competency gap in health management was reduced significantly through the training.
- The highest competency gap of local health managers indicated is assessing performance of employees.
- Competency in assessing performance determined managerial experience and position. Including gender, the former characteristics of managers also determined their competency in communication and leading. Competency in problem solving was determined by gender, level of education, managerial position and experience.
- The study results form a baseline for specific training set-ups for human resources for health.
- The explored health management competencies relate to policy and context. Countries with similar health management environment may find the structured approach to competency gap assessment helpful.
References


