Resilience Approach for Medical Residents

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Abstract. Medical residents are in a vulnerable position. While still in training, they are responsible for patient care. They have a dependent relation with their supervisor and low decision latitude.

An intervention was developed to increase individual and system resilience, addressing burnout, patient safety, and intention to leave. A participative development protocol was followed in close collaboration with residents and doctors in a middle-sized general hospital. The evaluation combined a quantitative and qualitative approach. Medical residents and their supervisors filled out questionnaires on indicators of resilience and outcomes. Focusgroup meetings and interviews were part of the intervention.

The prevalence of burnout among residents was relatively high, involvement in patient safety issues was rather low and very few considered to leave their training. Results are summarised in a 'resilience profile' of the system, consisting of five dimensions.
A "Health Care Resilience Approach" (HCRA) defines four steps: Resilience Profile, Participation, Performing & Monitoring, and Embedding & Connecting. The Resilience Profile gives insight and the HCRA helps improve resilience in a practical way. Success factors are simultaneously: participatory approach, focus on individuals, system of medical education. Close collaboration might be a bottleneck, since ad-hoc patient care always has priority.

1 INTRODUCTION

Medical residents (doctors in training to become medical specialists) are in a vulnerable position. While still in training, they are (partly) responsible for patient care. They have a dependent relation with their supervisor and have low decision latitude. In general, medical residents are committed and sometimes overcommitted to their job ('a vocation'). Furthermore, they frequently experience a double load in work and private life (e.g. starting a family). Previous studies show that this combination of factors poses

medical residents at increased risk for burnout and drop-out of their training. Exhaustion increases the risk of making medical mistakes. Burnout, medical mistakes and quitting training might be reduced if medical residents are more resilient and work in a more resilient system (of processes, supervision and private life).

2 OBJECTIVES

The objective of this study was to develop and evaluate an intervention to increase resilience of individual medical residents, their environment, and the organisation around them. This was expected to lead to an increased system ability to promote individual resilience. The hypothesis is that resilience has an indirect impact on burnout, the intention to leave, and medical errors. To achieve the goals of this project, the following research questions were defined:

1. How can resilience be made operational at the individual (medical resident and specialist), team and organisational (hospital) level?

2. What is the 'Resilience Profile' of the pilot hospital?

3. How can the 'Resilience Profile' contribute to progress of programmes that promote resilience?

3 METHOD

3.1 Intervention Mapping

A resilience model for health care was designed, combining knowledge from individual resilience and system resilience literature. To increase individual and system resilience we focused on four abilities: responding (to the actual), monitoring (the critical), anticipating (the potential) and learn (from the factual). We used the Intervention Mapping (IM) protocol as a guideline. An approach was designed, consisting of four phases: problem analysis, selection of methods and strategies, implementation, and evaluation. In this study the first two IM phases were carried out.

IM is applied to prevent or solve a (health) problem, starting with the definition of a direction for a solution, or an ambition. Further, in all process steps active involvement of relevant stakeholders and users of an intervention is essential, e.g. through focus groups. Finally, IM is an interative process: the steps are repeated until an optimal intervention has been developed.

3.2 Population and Working Group

The intervention process was followed in close collaboration with the target group in a regional middle-sized general hospital, following an iterative and participative approach. Medical residents and medical doctors of many different departments were involved and the employees of the Academy, the occupational physician and the HR

advisor. A broad working group was established, chaired by the Academy. The working group included external TNO-experts and convened four times during the project. A combined quantitative and qualitative approach was chosen for the evaluation study. At the start the medical residents and their supervisors filled out questionnaires on several key indicators of resilience and the outcomes (burnout, patient safety and intention to leave). These were followed by a literature scan, interviews and focusgroup meetings as a part of the development of the resilience intervention.

3.3 Questionnnaire

The questionnaire for residents consists of 39 questions and that for medical specialists consists of 34 questions. The questions were based on available literature and composed in dialogue with the working group. Some were subdivided into items, e.g.:

- Burnout (5-point Likert-scale, 5 items).
- Intention to leave (5-point Likert-scale, 2 items).
- Patient safety, focused on culture (5-point Likert-scale, 3 items).

After two weeks non-responders received a reminder. The data were analysed using SPSS. The reliability of the scores was tested through computing Crohnbach's alpha. Some results could be compared with those for the average Dutch working population in general and in the care sector.

3.4 Observations

Observations provide insight into daily activities of residents and specialists. There were three observations days at several departments: Emergency Care, Intensive Care, outpatient clinics and several wards. The observation reports were coded independently by four researchers and then discussed (peer debriefing). The results were utilised to define the interview items.

3.5 Interviews

A semi-structured protocol was written for the interviews, based on the questionnaire results. Four themes were included: learning & feedback, co-operation, patient safety, working hours. Six residents, six specialists/educators, the medical education co-ordinator and the occupational physician of the hospital were interviewed. Two researchers carried out the interviews. Interview reports were analysed in the same way as the observation reports.

3.6 Drawing up a Resilience Profile

The results from the questionnaires, interviews and observations together lead to a 'resilience profile' of the hospital. The combination of these information sources enables the use of quantitative and qualitative research methods (mixed methods).

4 RESULTS

In this study two kinds of results have been developed. Firstly, the results of the pilot study in one hospital in the Netherlands. Secondly, the resulting product “Health Care Resilience Approach” (HCRA).

The response among doctors and residents to the questionnaire was:

- Medical residents: N=47, 68% of the population in the hospital
- Medical doctors: N=69, 53% of the population in the hospital

4.1 Burnout, Intention to Leave and Patient Safety

Burnout

Burnout was investigated through questions about exhaustion, fatigue and general decreased functioning. The result is a score for burnout on a validated 5-point Likert scale (1 to 5). Medical residents have a higher average score (2.3) than medical doctors (1.9) and the average Dutch healthcare worker (2.1).

Perceived social support and autonomy are important determinants for the probability to develop a burnout (theory Job-Demand-Control model, Karasek and Theorell,1990). Perceived social support is a score on a validated 4-point Likert scale (1 to 4). The score is 3.3 for support from colleagues and 2.9 for support from supervisors. This is very close to the average Dutch healthcare worker.

Perceived autonomy is a score on a validated 3-point Likert scale (1 to 3). Residents have a much higher average score (2.3) than supervisors (1.4), close to the average Dutch healthcare worker (2.4).

Another important determinant of burnout is emotional load as a consequence of work. Emotional load is a score on a validated 4-point Likert scale (1 to 4). Residents and specialists have an equal average score (2.8), higher that the average Dutch healthcare worker (2.0).

Intention to leave

Both medical residents and specialists have been asked one question about the intention of residents to leave their training and education. Of the residents, 94% seldom or never seriously considers leaving the training. Of the specialists, 79% seldom or never gets signals that a resident seriously considers leaving.

Patient safety

Medical residents and doctors have been asked about the (perceived) extent of feedback that residents receive following errors and mistakes, with the aim to prevent them in the future. The extent of feedback is a score on a 5-point Likert scale (1 to 5). Residents (score 2.9) perceive less feedback and discussion than specialists (3.3).
The perceived level of patient safety is a score on a 5-point Likert scale (1 to 5). Residents (score 3.5) perceive patient safety to be better than specialists (2.6).

4.2 Resilience Profile

Five dimensions together give an indication of resilience among medical residents and specialists in the hospital, their teams and organisation, as visualised in Figure 1. These dimensions are discussed in this section.

Fig. 1. The Healthcare Resilience Profile is constituted of five dimensions

Feedback and Learning Culture

Among residents, 60-75% of the respondents is positive about the role of his/her supervisor in stimulating a positive learning culture. The supervisor listens, stimulates own thinking and making choices, and has confidence in the resident's abilities. However, only 28% states that they are informed about errors and mistakes in their department, and only 52% states that team discussion takes place to prevent errors and mistakes from reoccurring.

Work Schedule and Life-Work Balance

Residents have a formal contract for 44 hours per week on average. 74% of them work structurally more than their formal contract and 23% incidentally. In the interviews they state that they perceive this situation as normal and have no problem with it. However, the managers who are responsible for their education and work, do not support this. Further, residents feel very responsible for their work; 13% of them reports that they regularly go to work even when they feel ill.

Multidisciplinary Co-operation: Information sharing

Information sharing between colleagues upon shift changes is adequate, according to 65% of the respondents. However, relevant information often gets lost if a patient is

transferred to another department, according to 65% of the respondents. Departments have contacts with other departments only if there is a 'natural' relation.

Social Capital and Autonomy in Work

Social support and autonomy are positive resources. The contacts with colleagues are positive. The workload is reported to be high, but this is not seen as a problem. Some residents relate this to good personal contacts. Colleagues are helpful, interested and friendly, according to more than 90% of the residents. Supervisors are interested, promote working together, and pay attention to residents' ideas and initiatives, according to more than 85% of the residents. Co-operation within the team is good (more than 75%) and errors/incidents are not used personally against residents (more than 65%).

In the interviews several residents state that they are reluctant to take sickness leave when they are ill, because this puts a burden on their colleagues, who have already a high workload.

Autonomy heavily depends on the field of work: about 60% responds that they can regularly decide how to do their work, but only 26% is regularly free to define how fast and 41% can regularly define the order of activities.

Individual Resilience and Emotional Load

More than 95% of the residents states that intensive thinking and focused attention is often required (cognitive stress). 33% of them states that the work is often emotionally demanding. About 15% of them often feel emotionally involved (emotional load). From literature it is known that this 'professional friction' is required to increase resilience.

Questions were included about the confidence that residents had in 11 aspects of their personal efficacy regarding task performance and teamwork in stressful or threatening situations. Less than 5% has a score below 5 (1 = no confidence to 10 = full confidence). The average is 7 to 8. Quote from an interview: "Successful will be those who are flexible, structured and have social skills. To increase personal resilience, it is important to create back-up options together with colleagues." The results of these five dimensions are summarised in a so-called 'resilience profile' of the system in which medical residents operate. This 'resilience profile' allows resilience to be expressed in five dimensions. These dimensions were found to be the most closely linked to resilience and we hypothesize that these dimensions predict resilience in the specific work context. This helps medical personnel to make resilience operational in daily practice. The pilot hospital prioritizes 'multidisciplinary co-operation' and 'feedback and learning culture' as the key domains for their own situation. Policy of the hospital will focus on these two dimensions in the next years.

4.3 Healthcare Resilience Approach

This pilot study shows that this Healthcare Resilience Approach (HCRA) can support individual, team and organisational resilience programmes through the use of a

Resilience Profile. This approach distinguishes four phases:

- Drawing up a Resilience Profile
  - Questionnaire for medical residents and medical specialists
  - Interviews and observations at different workplaces
- Participatory phase in order to develop a plan
  - Individual: mindfulness, reflection
  - Academy of the hospital: facilitating intervision
  - Organization: Connecting strategic aims
- Performing the plan and monitoring progress
- Embedding and connecting
  - Connecting to existing (learning and consultation) structure

5 MANAGING TRADE-OFFS

The work environment of medical personnel in a hospital is very dynamic. Patients might need urgent attention, work hours could be longer than anticipated. Decisions are often complex, especially with the increasing number and fragility of elderly people with multiple problems. Medical specialists and also residents have many trade-offs to deal with on a daily basis:

- Daily busy schedules and urgent (unforeseen) patient needs hinder enhancement of individual and team resilience through e.g. learning, reflection and sharing;
- Patient needs have high priority and personal attention for patients is important to improve patient safety. However, as a consequence there is often not much room for personal or private issues: eating and drinking during work, pausing, getting rest, and social activities outside work are regularly postponed or skipped. This has a negative impact on resilient behaviour.
- Individual resilience grows as one goes through stressful and traumatic events, if followed by reflection and sharing of experiences. However, it takes resilience to get through such episodes.

These trade-offs are almost paradoxical, and are often difficult to handle for medical residents. These situations need critical attention by supervisors and the education department.

6 CONCLUSION AND DISCUSSION

6.1 Conclusions

Resilience is a valuable concept in the medical domain, but not easy to be translated to practical tools. Five dimensions of resilience were defined that reflect relevant areas of improvement. This ‘breaking down’ the concept of resilience is important to enable

people to work with it in a complex and sometimes chaotic work environment. This helps them to develop tools to practically evaluate their situation (diagnosis, monitoring) and improve it (treatment). It appears that these five resilience dimensions might be readily applicable in other hospitals. In sectors outside healthcare this might be different – this was however not part of this investigation.

The Health Care Resilience Approach is a promising approach for hospitals and medical personnel to express resilience in practical terms. This is especially helpful for personnel during their medical education (such as medical residents) and the system around them. Medical specialists, supervisors, nurses and education experts are part of that system. Succes factors seem to be the focus on both the individual and the system simultaneously and the strong participation of the medical residents.

- Patient safety: medical residents seem less involved than medical specialists in feedback and discussion of mistakes, but they perceive a better patient safety. The combination of these observations fits with a lower involvement of medical residents in patient safety.
- Intention to leave: Only a few medical residents consider leaving the education program.

6.2 Discussion

A point for discussion is the application of Intervention Mapping, which by definition is done in close collaboration with the target group. For medical personnel, including residents, patient related activities have almost always priority above anything else. Because immediate patient needs can hardly be anticipated, it is difficult to gather enough medical personnel for a productive meeting, focus group, or training. Therefore, the concept of Intervention Mapping in a medical setting should be adapted for the characteristics of daily work in hospitals.

Further research should focus on evaluation of the results of fully implementing the HCRA in the medical setting and adaptation of the HCRA for other health care professionals working in a complex environment, e.g. Intensive Care and Emergency Departments.

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