

A SWOT analysis of how the youngest doctors perceive the formal Danish educational advisory programme

Anita Sørensen¹, Marianne Kleis Møller², Pernille Andreassen³ & Bente Malling³

ABSTRACT

INTRODUCTION: A national formal advisory programme (NFAP) was introduced in Denmark in 1998. This study investigates the implementation of the NFAP and identifies areas to improve.

METHODS: In March 2017, a survey was conducted among all 129 doctors employed in the first rotation of postgraduate medical education in the Central Denmark Region. A priority chart was created to appoint strengths, weaknesses, opportunities and threats (SWOT).

RESULTS: The response rate was 67%. The questionnaire showed good reliability and discriminant validity. Almost all respondents had completed the recommended appraisal meetings and a personal learning plan, both of which – in contrast to the NFAP's coherence to everyday clinical practice – showed to have much influence on the overall value of the NFAP. Strengths found were that appraisal meetings and learning plans support the development of clinical competencies, the latter identifying learning objectives and how to achieve them. Threats identified included learning plans that were not prepared sufficiently early, were not regularly adjusted and that did not describe when each learning objective is to be achieved, or when, by whom or how assessment will take place.

CONCLUSIONS: Appraisal meetings and learning plans seem to be well implemented and to support the development of clinical competencies. Even so, improvements are needed, particularly to ensure an earlier preparation, inclusion of plans for assessment and regular adjustment of the learning plans.

FUNDING: The study was funded by the Central Denmark Region.

TRIAL REGISTRATION: Data collection was approved by the Danish Health Data Authority..

There is solid evidence that mentoring facilitates learning [1] and that doctors in postgraduate medical education (PGME) value mentors and educational advisors highly and point to significant benefits in the form of superior educational, professional and social skills, increased academic productivity, career development and job satisfaction [2-6]. For these reasons, various formal mentoring programmes have been launched.

However, most mentoring programs seem to lack evaluation [2, 6].

In 1998, the Danish Health Authority (DHA) made a national formal educational advisory programme (NFAP) mandatory in PGME [7]. Accordingly, all PGME doctors must, in each of their rotations, be appointed a formal educational advisor in the form of a senior colleague, who must conduct at least three appraisal meetings and ensure the preparation of a personal learning plan. The learning plan should describe learning objectives, including how, where and when to obtain these, as well as how, when and by whom they should be assessed. The plan must be prepared within the first two weeks of employment and must be adjusted regularly [7-9].

In an inquiry conducted by the DHA and the Danish Medical Association in 2011, 97% of doctors attending PGME stated to have a formal educational advisor, and 95% had more or less regular appraisal meetings with their advisor. Of doctors employed in hospitals in their first year of PGME (PGY1 doctors), 30% stated to have prepared a personal learning plan within the first two weeks, and 55% stated to have a personal learning plan [10, 11].

Great efforts from central as well as local authorities and faculties have since been put into improving the use of learning plans, and therefore a higher rate of implementation may be expected by now. The purpose of this study was to investigate the perceived extent of implementation of the NFAP among the youngest doctors with respect to the rules and recommendations established by the DHA in order to detect areas of improvement by identifying strengths, weaknesses, opportunities and threats.

METHODS

PGY1 doctors were chosen as the target population of this study because they are the less experienced and therefore supposedly most in need of guidance.

In March 2017, a survey was conducted among all 129 PGY1 doctors employed in their first six-month rotation of PGME in the Central Denmark Region. The Secretary of Postgraduate Medical Education in the Northern Educational Region had identified 130 po-

ORIGINAL ARTICLE

1) Administration, Randers Regional Hospital
2) Quality and HR Development, Aarhus University Hospital
3) Centre for Health Sciences Education, Health, Aarhus University, Denmark

Dan Med J
 2018;65(9):A5498

tential participants of whom one was identified as never having initiated the PGY1 employment why 129 invitations were sent out. Subsequently, with the help from the HR departments of all involved hospitals, 14 of the 129 invited doctors were identified to be on leave and were therefore excluded.

In the invitation, the participants were promised full discretion, and they gave their consent for participation by answering the questionnaire.

As the criteria for success in this study were defined as the extent of implementation of the NFAP in accordance with the rules and recommendations set by the DHA, the items were constructed by the researchers to match these [8, 9].

The questionnaire consisted of 37 items (questions and comment boxes) concerning five domains:

- 1) Descriptive data
- 2) Appraisal meetings
- 3) Personal learning plan
- 4) Coherence (the coherence between the NFAP and the “department’s work planning”, “morning reports”, the PGY1 doctors’ “daily work tasks”, “daily supervision”, “mandatory, theoretical courses” and “lectures given by the department”)
- 5) Benefits and value of the NFAP.

For domains 2-5, all items were answered on a six-point Likert Scale except for one item, which was answered on a nine-point Likert Scale. In both cases, “1” represented “Don’t agree at all”/“The least” and “6”/“9” represented “Totally agree”/“The most”.

The applicability was tested by five young doctors and a statistical advisor, which gave rise to rewording and replacement of a few of the items.

To evaluate the extent of implementation of the various elements of the NFAP, the mean score and standard deviation (SD) of the scale questions from domains 2–5 were calculated. Mean score and SD of the one question answered on a nine-point Likert Scale was recalculated to a six-point Likert Scale to ensure comparability with the other answers.

A driver performance analysis was conducted to

show how each of the domains 2-4 contributed to the fifth domain “Benefits and value”. Based on this and its mean score, each item was plotted into a priority chart to appoint strengths, weaknesses, opportunities and threats, thereby creating a quantitative SWOT.

Trial registration

The Regional Ethical Committee assessed that the study was non-notifiable (record number 1-10-72-6-16). Data collection was approved by the Danish Health Data Authority (record number 2012-58-006).

RESULTS

Of 115 actively employed doctors, only participants who answered more than half of the questions were included in the analysis, corresponding to a response rate of 67% (77/115).

The questionnaire showed very good reliability (Chronbach’s alphas between 0.89 and 0.94), as well as an acceptable discriminant validity (all intra-domain correlations were below the inter-domain correlations).

As shown in **Table 1**, all respondents had a minimum of one appraisal meeting, and 90% (35/39) of PGY1 doctors who had been employed for more than four months had a minimum of two appraisal meetings. A total of 86% (65/76) had a personal learning plan. Of these, 33% (25/76) had the plan prepared within the first two weeks of employment as required, and 64% (49/76) had a plan prepared within their first month of employment.

Figure 1 presents the mean score and SD of all scale questions concerning the domains “Appraisal meetings”, “Personal learning plan”, “Coherence” and “Benefits and value”.

Figure 2 presents the model of explanation created from the driver performance analysis by estimation of partial least squares and bootstrapping [12-14].

The items of the three domains “Appraisal meetings”, “Personal learning plan” and “Coherence” were calculated to be responsible for 74.5% of the variance in the items of “Benefits and value” ($R^2 = 0.745$). Of these, “Personal learning plan” contributed with 41%,

TABLE 1

Descriptive data for appraisal meetings and personal learning plans (N = 77).

Duration of employment, mo.s	n	Appraisal meetings, n (%)					Personal learning plan prepared, n (%)				
		expected min.	1	2	3	≥ 4	prepared week 1-2	prepared week 3-4	prepared month 2-4	no plan	unknown
< 1	2	0-1	1 (50)	1 (50)	0	0	0	1 (50)	0	1 (50)	0
1-4	36	1-2	31 (86)	4 (11)	1 (3)	0	13 (36)	14 (39)	4 (11)	4 (11)	1 (3)
> 4	39	2-3	4 (10)	29 (74)	4 (10)	2 (5)	12 (30)	9 (23)	12 (30)	6 (15)	0

FIGURE 1

Mean score and standard deviation (SD) of each scale question in the survey, divided into the four domains: "Appraisal meetings", "Personal learning plan", "Coherence" and "Benefits and value". Questions were answered on a six-point Likert Scale where 1 = "do not agree at all"/"the least" and 6 = "totally agree"/"the most".

Domains	Scale questions from survey	Graphic score	Mean score (SD)
Appraisal meetings	1. My need for appraisal meetings was met		4.56 (1.3)
	2. The appraisal meetings included the proper amount of career advice		3.88 (1.6)
	3. The appraisal meetings gave me an opportunity to give feedback to the department		3.75 (1.5)
	4. The appraisal meetings support the development of my clinical competencies		4.08 (1.4)
Personal learning plan	5. My advisor and I worked together to work out my learning plan		4.17 (1.7)
	6. My personal learning plan is regularly adjusted and further developed		3.52 (1.7)
	7. My personal learning plan identifies MY learning goals		4.31 (1.2)
	8. My personal learning plan describes HOW I must achieve my learning goals		4.0 (1.3)
	9. My personal learning plan describes WHEN I must achieve my learning goals		3.68 (1.6)
	10. My personal learning plan describes WHAT mandatory theoretical courses I must attend		4.46 (1.7)
	11. My personal learning plan describes WHEN I must attend the mandatory theoretical courses		3.84 (1.9)
	12. My personal learning plan describes HOW my competencies (learning goals) will be assessed		3.48 (1.6)
	13. My personal learning plan describes WHEN my competencies (learning goals) will be assessed		3.16 (1.6)
	14. My personal learning plan describes WHO will assess my competencies (learning goals)		3.23 (1.7)
	15. The personal learning plan supports the development of my clinical competencies		4.13 (1.4)
Coherence	16. The coherence between the formal appraisal and work planning in the department is good		3.62 (1.4)
	17. The coherence between the formal appraisal program and conferences in the department is good		3.61 (1.5)
	18. The coherence between the formal appraisal program and my daily work tasks is good		4.13 (1.4)
	19. The coherence between the formal appraisal and day-to-day supervision is good		3.84 (1.6)
	20. The coherence between the formal appraisal program and teaching in the department is good		3.42 (1.6)
	21. The coherence between the formal appraisal program and the theoretical mandatory courses is good		3.94 (1.4)
Benefits and value	22. What is your benefit from the appraisal meetings		3.68 (1.3)
	23. What is your benefit from your personal learning plan		3.31 (1.2)
	24. What is the value of the formal appraisal program (recalculated from 9- to 6-point Likert scale)		3.78 (1.4)

"Appraisal meetings" with 40% and "Coherence" with 19%. The elasticity of the model, i.e., the relationship between the explanatory variables and the predicted variables, proved normal (Input/output = 1.07), which allows it to be used for prediction and prioritising.

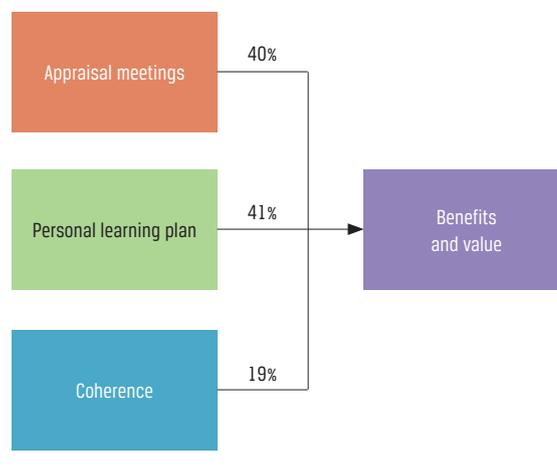
Figure 3 therefore shows each item from "Appraisal meetings", "Personal learning plan" and "Coherence" plotted into a priority chart according to its mean score and the influence of its domain, thereby appointing strengths, weaknesses, opportunities and threats.

Especially two of four items concerning appraisal meetings can be considered strengths, i.e., items with both a high mean score and considerable influence (orange dots 1, 4). This applies to "My need for appraisal meetings was fulfilled" and "The appraisal meetings support the development of my clinical competencies".

In relation to learning plans, four of eleven items can be considered strengths (green dots 5, 7, 8, 15). This applies to the learning plan identifying learning objectives and how they are achieved, and the advisor participating in the preparation of the learning plan, as well as the ability of the learning plan to support the development of clinical competencies.

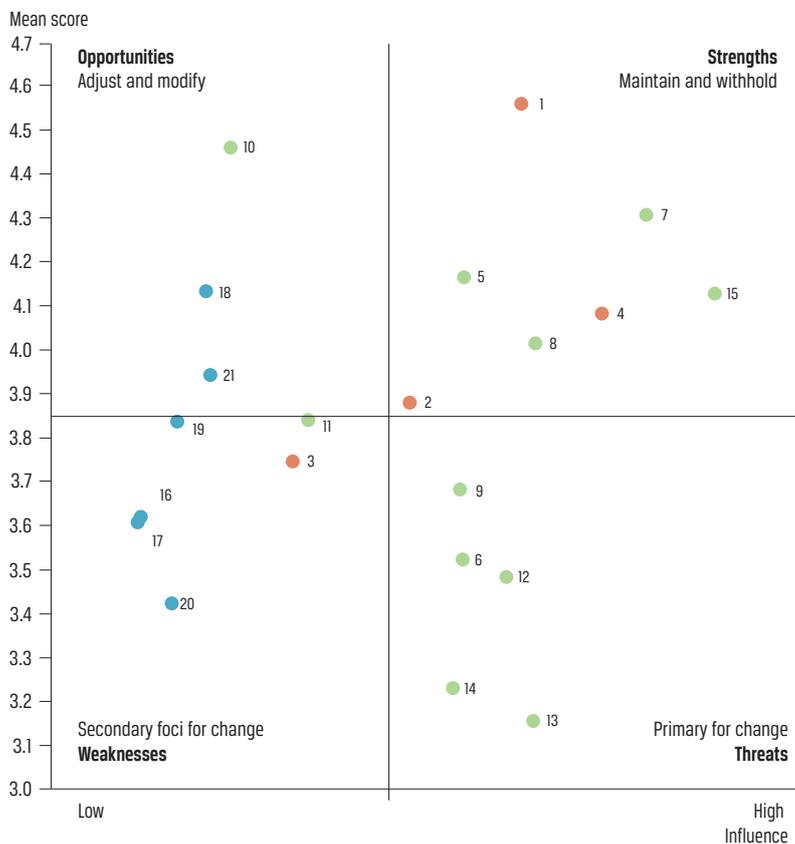
FIGURE 2

The driver model shows the share of influence on "Benefits and value" for each of the domains "Appraisal meetings", "Personal learning plan" and "Coherence" (the coherence between the a national formal educational advisory programme and the "departments' work planning", "morning reports", the "daily work tasks" of the postgraduate doctors in their first year of medical education hospital, "daily supervision", "mandatory, theoretical courses", and "lectures given by the department").



 **FIGURE 3**

The priority chart shows, which items from each of the three driver domains "Appraisal meetings", "Personal learning plan" and "Coherence" that can be considered strengths, weaknesses, opportunities and threats based on its mean score and the influence of its domain. The colour and number of each dot as well as the scale (mean score) refer to Figure 1.



Items with a high influence but a low mean score are considered threats, and this applies to the learning plan not being adjusted regularly and not describing when each learning objective has to be obtained and when, by whom and how it will be assessed (green dots 6, 9, 12, 13, 14).

The coherence between the NFAP and the work planning, morning reports, lectures and daily supervision provided by the department emerge as weaknesses (blue dots 16, 17, 19, 20). The coherence between the NFAP and the PGY1 doctors' daily work tasks and mandatory theoretical courses (blue dots 18, 21) emerge as opportunities.

DISCUSSION

This study shows that the NFAP has, to a high degree, been implemented among PGY1 doctors employed in the Central Denmark Region. However, some elements still need attention.

Concerning the extent of implementation, we found that the majority of doctors who were employed for

more than four months had a minimum of two appraisal meetings and stated that their need for meetings was met to a very high degree.

Webb found that voluntary meetings between second-year core medical trainees as mentors and first-year medical core trainees as mentees took place two to five times a year, and Ramanan even found that most residents were satisfied with meetings held once or twice every year [5, 15]. Mentors and mentees in anaesthesiology agreed that an initial meeting should occur within the first few months of residency and contact should occur twice a year as a minimum [16].

These as well as our findings suggest that there is no perceived need for further meetings beside the three meetings recommended in the Danish NFAP. However, we found no literature describing a potential effect of more or fewer meetings.

Regarding the learning plans, the implementation has - as expected - progressed from 55% stating that they had a learning plan in 2011 [10] to 86% in our study. The percentage of learning plans prepared within the first two weeks has not changed.

The use of learning plans is considered important as a tool for reflecting on personal development and monitoring [10]. Therefore, even if one month was regarded as acceptable before a learning plan was in place in a rotation of only six months, improvements could be hoped for, as this is only the case for 64% of the PGY1 doctors in our study.

The driver analysis showed that appraisal meetings and personal learning plans had by far the highest influence on the overall benefits and value of the NFAP. Surprisingly, the following had only a limited influence: coherence of the NFAP with work planning, morning reports, lectures and daily supervision provided by the department plus the PGY1 doctors' own daily work tasks and mandatory theoretical courses. This might, in part, be due to the PGY1 doctors understanding of the NFAP as an isolated educational initiative that neither has nor should be coherent with their everyday clinical practice or mandatory theoretical courses - maybe influenced by the ongoing discourse about production versus education. The reasons for the lack of coherence were not investigated in this study, and we found no literature shedding light on this issue.

Learning plans identifying learning objectives and how these are to be achieved, and advisors participating in the preparation of the plans, proved to be elements worth maintaining. This is in accordance with Challis, who states that the doctor needs help from a tutor, a colleague or a programme director to develop the plan, which must include learning objectives and ways to obtain these objectives [17].

Also the ability of appraisal meetings and learning plans to support the development of clinical compe-

tencies were identified as strengths of the NFAP, which is in line with the international literature on mentoring [2-6].

Important foci for improvement were inclusion of a timeline for achievement and assessment of learning objectives, as well as regular adjustment of the plans. A young doctor who does not know when a certain learning objective has to be obtained and assessed may be compared with a student who does not know when and how his or her examination will take place. This is also supported by Challis, who states that learning plans must describe the time frame provided for reaching the objectives, as well as how to know when the goals have been achieved [17]. Furthermore, the fact that learning plans do not describe plans for assessment raises a concern that assessment may be conducted rather randomly. Sambunjak et al. state that mentors should assist mentees in identifying further performance improvement and help define, expand and reach goals [18]. Similarly, the lack of regular adjustment of the learning plan raises concerns that the plan may not be used, thereby not giving the PGY1 doctors the motivation for expanding their goals beyond what was agreed on at the beginning of their six-month rotation.

The population in this study comprised all 129 doctors employed in the first rotation of PGY1 in one of five political regions in Denmark, and the response rate was relatively high.

Although the other four regions are subjected to the same DHA rules and recommendations, the results are not necessarily representative of all five regions as the willingness or mechanisms to ensure full implementation of well-intended official policies may vary for various system- or organisation-related reasons, thereby affecting the process and outcome of mentoring [19].

The results rely solely on the opinion of PGY1 doctors and do not include the perspectives of the advisors, directors of PGME, etc. In previous Danish studies, it has been found that doctors in PGME quite consistently score educational questions lower than consultants and directors [11, 20]. Because of the above-mentioned limitations, it would be interesting to carry out this study at a larger scale, including all five regions and doctors from all levels of the PGME as well as advisors and directors.

CONCLUSIONS

This study shows that appraisal meetings and learning plans are well implemented and – in contrast to the NFAP's coherence to everyday clinical practice – have much influence on the overall perceived benefits and value of the NFAP among PGY1 doctors in the Central Denmark Region. Almost all respondents conduct the recommended appraisal meetings and have a personal

learning plan, which is prepared in collaboration with the advisor and which identifies learning objectives and ways to achieve them. Both appraisal meetings and learning plans support the development of the PGY1 doctors' clinical competencies. Even so, improvements are needed, particularly to ensure an earlier preparation, inclusion of plans for assessment and regular adjustment of the learning plans.

CORRESPONDENCE: Anita Sørensen. E-mail: anison@rm.dk

ACCEPTED: 28 June 2018

CONFLICTS OF INTEREST: Disclosure forms provided by the authors are available with the full text of this article at www.danmedj.dk

LITERATURE

- van der Vleuten CP, Driessen EW. What would happen to education if we take education evidence seriously? *Perspect Med Educ* 2014;3: 222-32.
- Buddeberg-Fischer B, Herta KD. Formal mentoring programmes for medical students and doctors - a review of the medline literature. *Med Teach* 2006;28:248-57.
- Flexman AM, Gelb AW. Mentorship in anesthesia. *Curr Opin Anaesthesiol* 2011;24:676-81.
- Han ER, Chung EK, Oh SA et al. Mentoring experience and its effects on medical interns. *Singapore Med J* 2014;55:593-7.
- Ramanan RA, Taylor WC, Davis RB et al. Mentoring matters. Mentoring and career preparation in internal medicine residency training. *J Gen Intern Med* 2006;21:340-5.
- Sambunjak D, Straus SE, Marusic A. Mentoring in academic medicine: a systematic review. *JAMA* 2006;296:1103-15.
- Danish Health Authority. Vejledning og evaluering i den lægelige videreuddannelse. Struktur, retningslinier og ansvarsfordeling. Danish Health Authority; Copenhagen, 1998.
- Danish Ministry of Health. Executive order no 1257 of 25/10/2007: Executive Order on the Training of Medical Specialists, 2007.
- Danish Ministry of Health. VEJ nr 9586 af 14/07/2008: Vejledning om kompetencevurdering i den lægelige videreuddannelse, 2008.
- Danish Health Authority. Speciallægeuddannelsen - status og perspektivering. Danish Health Authority; Copenhagen, 2012.
- Danish Health Authority. Enqueten. Danish Health Authority; Copenhagen, 2011.
- Vinzi VE, Chin WW, Henseler J et al. Handbook of partial least squares. Springer, 2010.
- Fornell C, Cha J. Partial least squares. In: Bagozzi RP, ed. *Advanced methods of marketing research*. John Wiley & Sons, 1994:52-78.
- Hair JF, Hult GTM, Ringle CM et al. A primer on partial least squares structural equation modeling. Blackwell, Cambridge, SAGE Publishing, 2014:101-2.
- Webb J, Brightwell A, Sarkar P et al. Peer mentoring for core medical trainees: Uptake and impact. *Postgrad Med J* 2015;91:188-92.
- Alisic S, Boet S, Sutherland S et al. A qualitative study exploring mentorship in anesthesiology: Perspectives from both sides of the relationship. *Can J Anaesth* 2016;63:851-61.
- Challis M. AMEE medical education guide no. 19: Personal learning plans. *Med Teach* 2000;22:225-36.
- Sambunjak D, Straus SE, Marusic A. A systematic review of qualitative research on the meaning and characteristics of mentoring in academic medicine. *J Gen Intern Med* 2010;25:72-8.
- Sambunjak D. Understanding wider environmental influences on mentoring: towards an ecological model of mentoring in academic medicine. *Acta Med Acad* 2015;44:47-57.
- Mortensen L, Malling B, Ringsted C et al. What is the impact of a national postgraduate medical specialist education reform on the daily clinical training 3.5 years after implementation? A questionnaire survey. *BMC Med Educ* 2010;10:46.