GPs' motivation for teaching medical students in a rural area - development of the Motivation for Medical Education Questionnaire (MoME-Q)

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Background. The establishment of a medical education program in the rural area of Siegen is planned to be the first step against a shortness of physicians in this region. General Practitioners (GPs) will be extensively involved in this program as Family Medicine (Allgemeinmedizin) will become a core subject in the curriculum nationwide. Based on this situation we aim to construct and test a new questionnaire to figure out GPs motivation to participate in medical education.

Methods. A survey was conducted among General Practitioners (GPs) in the region of Siegen-Wittgenstein regarding their motivation to participate in medical education. For this purpose the Motivation for Medical Education Questionnaire (MoME-Q), a 24-item questionnaire, was developed. Structural characterictics of GPs and the Maslach Burnout Inventory (MBI) and the Work Satisfaction Questionnaire (WSQ) were used for validation purposes.

Results. A representative number of GPs took part in the study (53.8%). Although the majority has no connection to a university yet (86%), 83% can imagine to participate in the education of medical students. The items of the MoME-Q load on two factos (commitment and personal benefit). The confirmatory factor analysis shows a good model fit. Subscales of the MoME-Q were able to differentiate between physicians with and without authorization to perform practical education, between practices with and without a specialized practice nurse, between physicians with and without previous experience in medical education. Correlations with the MBI were in the expected directions.

Conclusion. The MoME-Q seems to be an appropriate tool to assess motivation to participate in medical education of GPs. In our sample, a large number of GPs is motivated to participate in the education of medical students. Factors like emotional exhaustion and depersonalization seem to hinder GPs whereas prior teaching experience and work satisfaction foster participation.

1 **GPs' motivation for teaching medical students in a rural area**

2 **- development of the Motivation for Medical Education**

3 **Questionnaire (MoME-Q)**

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21 **Short title:** GPs' motivation to teach medical students

22 **Key words:** teaching, medical students, rural area

Abstract

Background

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Methods

A survey was conducted among General Practitioners (GPs) in the region of Siegen-Wittgenstein regarding their motivation to participate in medical education. For this purpose, the Motivation for Medical Education Questionnaire (MoME-Q), a 24-item questionnaire, was developed. Structural characterictics of GPs, the Maslach Burnout Inventory (MBI) and the Work Satisfaction Questionnaire (WSQ) were used for validation purposes.

Results

A representative number of GPs took part in the study (53.8%). Although the majority has no connection to a university yet (86%), 83% can imagine to participate in the education of medical students. The items of the MoME-Q load on two factors (commitment and personal benefit). The confirmatory factor analysis shows a good model fit. Subscales of the MoME-Q were able to differentiate between physicians with and without authorization to train GP residents, between practices with and without a specialized practice nurse, and between physicians with and without previous experience in medical education. Correlations with the MBI were in the expected directions.

Conclusion

The MoME-Q seems to be an appropriate tool to assess motivation to participate in medical education of GPs. In our sample, a large number of GPs is motivated to participate in the education of medical students. Factors like emotional exhaustion and depersonalization seem to hinder GPs whereas prior teaching experience and work satisfaction foster participation.

Introduction

58   In many rural regions, a shortness of physicians, especially General Practitioners (GPs)

59   is obvious and will dramatically increase in the near future. A smaller number of GPs will

60   have to take care of a larger number of patients and catchment areas will increase.

61   Furthermore, GPs, at least in the German setting, will be challenged by the Masterplan

62   2020. With the Masterplan Medical Education 2020, the importance of „General

63   Practice" will significantly increase. General Practice will become a major subject within

64   the medical education curriculum (*Bundesministerium für Gesundheit*, 2017). On the

65   one hand, every student will have to complete three months of General Practice

66   education within the sixth study year (practical year), on the other hand, General

67   Practice will become a mandatory examination subject in the final oral examination (3rd

68   part of the examination). This matter of fact is of high relevance as a large number of

69   GP practices for teaching and training will be necessary in order to comply with this

70   demand. Those two facts, the demographical perspective as well as the necessity to

71   participate in the education of medical students, create a challenge that needs to be

72   mastered.

73   The district of Siegen-Wittgenstein represents a typical and representative rural region

74   in Germany. Here, a shortness of doctors, especially General Practitioners (GPs) is

75   obvious and will dramatically increase in the near future. Some municipalities in Siegen-

76   Wittgenstein are already listed at the Ministry of Health as municipalitites, where a

77   critical shortage of GPs has already occured (Erndtebrück, Kreuztal, Wilnsdorf or

78   Burbach) (*Ministerium für Gesundheit, Emanzipation, Pflege und Alter des Landes*

79   *Nordrhein-Westfalen*, 2016) or is most likely to occur within the near future (e.g. Bad

80   Berleburg, Bad Laasphe) (*Ministerium für Gesundheit, Emanzipation, Pflege und Alter*

81   *des Landes Nordrhein-Westfalen*, 2017). In other words, a significant number of the

82   GPs has reached retierement age and the total number is too low to provide sufficient

83   medical service for the aging population in the district.

84   Offering a medical education program in such a region could therefore be seen as a first

85   useful step to diminish the shortness of doctors, especially GPs, in the region in order to

86   preserve medical care for patients, for instance in the rural area.

87   In the near future, medical students will be educated and trained in Siegen, where a

88   new medical campus will be established in cooperation with the University of Bonn

89   Medical School. Starting with the term 2018/19 twenty-five medical students will be

90   enrolled for the Bonn/Siegen program (*Universität Siegen*). Students will start their

91   education in Bonn for three 3 years and will then continue and finish their studies in

92   Siegen (study year 4 to 6). Prior research has demonstrated a so called "Klebeeffekt"

93   for the field of medical education, which means that a lot of medical students stay in the

94   greater area where they finished their studies in order to work in hospitals and practices

95   after passing their final exams (*Buxel*, 2009; *Lenz* et al., 2010; *Töpfer, Silbermann &*

96   *Maertins*, 2011; *Jacob, Kopp & Schulz*, 2015). As up to now no medical school campus

97   is available in Siegen, only a few GPs are collaborating with other universities regarding

98   medical education and research. Hence, only a limited number of GP sees medical

99   students in their practices on a regular basis. Studies have shown significant effects of

100 teachers' characteristics on the achievement of students (*Wayne & Youngs*, 2003;

101 *Zumwalt & Craig*, 2005). For instance, motivation of teachers can enhance autonomous

102 learning motivation in their students (*Roth* et al., 2007; *Radel* et al., 2010; *Kunter M.* et

103   al., 2013), which in the end can have a positive effect on the overall academic

104   performance (*Kusurkar* et al., 2013).

105   Until now, there is no instrument available for the assessment of teaching motivation.

106   Next to qualitative studies (*Thomson* et al., 2014; *Ingham* et al., 2015) to assess

107   motivation, the Physician Teaching Motivation Questionnaire (PTMQ) was developed to

108   measure motivation to teach in physicians already involved in medical education

109   (*Dybowski & Harendza*, 2015). It was developed and validated in physicians from

110   internal medicine and surgery and shows good statistical quality criteria.

111   Based on this situation we aim to figure out GPs motivation to participate in medical

112   education in the district of Siegen-Wittgenstein. Furthermore, we aim to look at

113   structural characteristics and the GP's motivation to participate in medical education.

114   For this purpose, a new instrument has to be developed and examined.

115   Materials & Methods

116   Design and GP recruitment

117   We conducted a study in which all General Practitioners in the district of Siegen-

118   Wittgenstein were invited to take part. GPs were asked regarding their motivation to

119   participate in medical education of students as well as their work satisfaction and

120   burnout risk. In addition, they were asked in detail regarding their work perspective. In

121   this paper, we focus on the GPs motivation to participate in medical education of

122   students.

123   This survey (HaMEdSi: **Ha**usärzte (GPs) for **M**edical **ED**ucation in **Si**egen-Wittgenstein)

124   was performed in general practices in the area of Siegen-Wittgenstein in Germany

125   between October 2017 and January 2018. GPs were sent a written invitation with a

126   detailed study description, informed consent and the study questionnaire. After 4 weeks

127   all GPs who did not respond received a telephone reminder by a member of the study

128   team. An invitation to participate was also sent by email to all members of the local

129   doctor's association, in which most of the GPs hold a membership. Furthermore, an

130   informative meeting on the medical education perspective at the University of Siegen

131   was held to which all GPs were invited and a large amount took part. In this meeting,

132   GPs were also reminded and invited to take part in the study.

133   The study was performed in accordance with the Declaration of Helsinki and approved

134   by the research ethics committee of the University of Marburg (Az.: Studie 127/17).

135   **Development of the Motivation for Medical Education Questionnaire**

136   **(MoME-Q)**

137   As there is no appropriate tool available to assess GPs motivation to take part in

138   medical education of students, we developed a questionnaire based on the existing

139   literature (*Thomson* et al., 2014; *Ingham* et al., 2015) as already mentioned above.

140   Further items were developed and consented by expert panel meetings involving GPs

141   as well as medical specialists experienced in the training of medical students.

142   Afterwards a small pilot study (n=6) was conducted among GPs experienced in the

143   training of medical students (n=3) as well as among GPs with less experience in

144   teaching students (n=3). All participants were invited to give a detailed written feedback

145   and were also interviewed for further feedback on the questionnaire. The initial version

146   of the questionnaire was slightly adjusted after the pilot study and as a result the

147   Motivation for Medical Education Questionnaire (MoME-Q) developed. The MoME-Q is

148   a 24item questionnaire with a four-point Likert scale with verbal descriptions "agree",

149   "rather agree", "rather not agree", "do not agree" (see appendix). Based on the critical

150   reading of the literature and the expert panel meetings, we hypothesized that the

151   instrument would have a four-factor structure with factors "conviction", "personal

152   benefit", "personal resources", and "time management" with lower scores meaning more

153   positive outcomes on the respective scales.

Further instruments

155   We used the German version of the Maslach Burnout Inventory (MBI) to assess

156   occupational burnout. The MBI comprises of 22 items to be scored on a 7-point-scale

157   from "0-never" to "7-every day". It consists of 3 subscales, namely "emotional

158   exhaustion" (9 items) which measures exhaustion at work, depersonalization (5 items),

159   which measures loss of empathy and emotional distance to others, and personal

160   accomplishment (8 items) which measures competence and positive attitude towards

161   work. The three-factor structure was confirmed (*Neubach & Schmidt*, 2000), Cronbach-

162   α of the emotional exhaustion scale was .85, of the personal accomplishment subscale

163   .71, and of the depersonalization subscale just .48. Other studies found higher internal

164   consistencies for this subscale with Cronbach-alphas of .69 and .86, respectively

165   (*Schwarzer, Schmitz & Tang*, 2000; *Gumz* et al., 2013). Convergent and discriminant

166   validity of the MBI could be demonstrated.

167 The Work Satisfaction Questionnaire is comprised of 17 items to be scored on a 7-

168 point-scale from "1-very dissatisfied" to "7-very satisfied". It has a five-factor structure

169 with factors patient care (4 items, Cronbach-α = .76), burden (4 items, α = .79), income-

170 prestige (3 items, α = .83), personal rewards (3 items, α = .71), professional relations (2

171 items, α = .66). Furthermore, a global item asks for the satisfaction with the current job

172 situation. This item correlates with the subscale scores form .39 - .71 (*Bovier &*

173 *Perneger*, 2003).

Statistical analyses

175 There were up to 3 missing values on single items of the MoME-Q. They were replaced

176 by the k nearest neighbor algorithm (kNN) (*Beretta & Santaniello*, 2016) using the R

177 package VIM (*Kowarik & Templ*, 2016).

178 We conducted a confirmatory factor analysis with the R package lavaan (*Rosseel*,

179 2012). We used the robust Unweighted Least Squares Estimator (ULSMV), as this

180 estimation method makes no distributional assumptions (*Rosseel*, 2012; *Lei & Wu*,

181 2015). Different model-fit statistics were calculated. The χ^2/df ratio is a badness-of-fit-

182 index as smaller values indicate a better fit (*West, Taylor & Wu*, 2015). Values around 2

183 signal a good model fit. The Root Mean Square Error of Approximation (RMSEA) is a

184 population-based index that relies on the noncentral χ^2 distribution. It can be regarded

185 as an "error of approximation" index because it assesses the extent to which a model

186 fits reasonably well in the population (*Brown*, 2015). Values ≤ .08 are considered to

187 indicate an adequate model fit (*Browne & Cudeck*, 1993). The standardised root mean

188 square residual (SRMR) was calculated that measures the mean absolute value of

189   covariance residuals (*Little & Kline*, 2016). Values below .10 indicate a good model-fit

190   (*Weiber & Mühlhaus*, 2014). The Comparative Fit Index (CFI) and the Tucker Lewis

191   Index (TLI) were not considered as they are sensitive to smaller sample sizes like ours

192   in ULS estimation (*Lei & Wu*, 2015). The resulting items and scales were examined by

193   parameters based on classical test theory like Cronbach-α, discriminatory power,

194   average intercorrelations. Omega coefficients for the applied scales were also

195   computed using R packages psych and GPArotation as they have known advantages

196   over Cronbach's-α (*Raykov*, 2001).

197   We used Hotelling´s T^2-test from the R library "Hotelling" to compare different

198   demographic groups on the scales of the MoME-Q (*Hair*, 2010). After a significant

199   multivariate result univariate Welch t-tests were calculated to explore the analyses

200   further. The univariate effect size partial Cohen´s d was then calculated with values of

201   .20 representing a small effect, .50 showing a medium effect, and .80 a large effect

202   (*Grissom & Kim*, 2012).

203   We used the Spearman correlation coefficient to calculate associations between the

204   MoME-Q subscales and other instruments as most of the variables deviated

205   significantly from the normal distribution (*Kim, Kim & Ergün*, 2015). Due to multiple

206   testing, the significance value was adjusted by the Bonferroni correction (*Bortz &*

207   *Schuster*, 2010).

208

209 **Results**

210 **Characterization of the study sample**

211 The total population consists of 158 GPs. Of them, 85 (53.8%) took part in the study

212 and completed the questionnaire. There are 64 male GPs (75.3%) in our sample. The

213 gender distribution conforms to the proportions in the population in this specific area.

214 Mean age of the participants is 53.5 years (SD 8.93) with a median of 54 years, a

215 minimum age of 32 and a maximum age of 73 years. The majority (91.8%) are practice

216 owners, work full-time (90.6%) and work in a group practice (67.1%). The average study

217 participant works in private practice for 18.41 years (mean, SD 9.8 yrs) with a range

218 between 2 and 43 years. Most of them are specialized in General Practice (51.8%),

219 whereas 24.7% are specialized in Internal Medicine and 20.0% have both

220 specializations. The minority (3.5%) are „Praktischer Arzt" without any further

221 specialisation. This denomination has been deestablished and taken out the regulation

222 for further education in 1992. It is notable that despite of all political obstacles 94%

223 would become GP again.

224 Looking at teaching, only 14% have an affiliation with a university. The majority (59%)

225 has at least some teaching experience, for instance most GPs have seen students for

226 a clinical elective (57%), whereas only 17% have seen students within a university

227 primary care rotation programm (Blockpraktikum). A minority of 11% has seen students

228 for parts of the practical year and only 3% have ever given lectures or seminars at a

229 medical school.

230

231

232   Table 1 summarizes the demographic characteristics of the study participants.

233   **Please insert Table 1 about here.**

234

235   **Motivation for Medical Education Questionnaire (MoME-Q)**

236   The original version of the Motivation for Medical Education Questionnaire consisted of

237   28 items (supplementary table 1). After inspection of the statistical characteristics of the

238   items and supported by the explorative nature of the study, we decided to exclude 4 of

239   them from further analyses (supplementary table 2). Further details are explained

240   below.

241   The item „I hope to attract more patients being an „Academic Teaching Practice" was

242   initially considered to have a positive connation. The study results show, that GPs in the

243   region of Siegen-Wittgenstein, threatend by a critical shortage, do not desire to treat

244   more patients. Consequently, 76.5% of responses are in categories „3" and „4" which

245   means that physicians do not wish to attract more patients for their practices as their

246   current workload obviously is already high. The item is highly left skewed (p<.001).

247   The item „Students can support and relieve me in daily routine patient care" can be

248   interpreted differently. On the one hand, the GP as a teacher should focus on teaching

249   and support a good learning environment and not make use of the student's work force

250   in the first instance. On the other hand, integrating students in real patient care

251   according to their state of knowledge can make sense and foster personal development.

252   Furthermore, teaching students next to patient care in daily practice is also time-

253   consuming. As the content of the item remained unclear, we decided to exclude it. The

254   item „I hope that „General Practice" gets more attention if more GPs take part in medical

255   education of students" is too general. Therefore, 76.5% of responses are in categories

256   „1" and „2" which means that physicians hope that their specialty will get more

257   recognition by participating in the education of students.

258   The item „I have made bad experiences with medical students in my practice in the

259   past" has a mean of 3.81, a median of 4, and a SD of 0.15; 100% of responses are in

260   categories „3" and „4" which means that physicians hardly ever made bad experiences

261   with students. Most of the study participants did not make experiences with medical

262   students at all, which made it impossible for the majority of study participants to answer

263   this question.

264   Descriptive statistics of the remaining 24 items are displayed in Table 2. The numbering

265   of the items in the article corresponds to the initial version of the questionnaire. As can

266   be seen, a substantial number of items shows significant deviations from normality

267   regarding skewness and kurtosis.

268   **Please insert Table 2 about here.**

269

270   The remaining items were hypothesized to load on the 4 different factors conviction,

271   personal benefit, personal resources, and time management. The confirmatory factor

272   analysis with the robust ULSMV estimation method showed a good model fit: χ^2/df =

273   1.36, RMSEA = .066, SRMR = .096. Factors conviction and personal resources

274   correlated .97 and there was also a high correlation between factors conviction and time

275   management (r = -.86). Model parsimony is a main target in confirmatory factor

276   analysis. Highly correlating factors do not convey additional information. Therefore,

277   factors conviction, personal resources, and time management were united into one

278   factor called „commitment" and a new analysis postulating a two-factor model

279   ("commitment" and "personal benefits") was performed. The confirmatory factor analysis

280   with the robust ULSMV estimation method again showed a good model fit: $\chi^2/df = 1.38$,

281   RMSEA = .067, SRMR = .098.

282   **Please insert Table 3 about here.**

283   As shown in Table 3, all factor loadings are in the satisfactory range and the correlation

284   between the two factors is also acceptable (r = .503). Therefore, this two factor solution

285   can be accepted and we calculated 2 subtest scores in the MoME-Q for further

286   analyses. We have to mention that this is not a confirmatory but a model generating

287   approach (*Jöreskog*, 1993) which means that this structure has to be confirmed in a

288   new sample. This was done as the instrument was newly developed and there were

289   only preliminary hypotheses about the structure of the questionnaire. After reversing

290   items 18, 19, 20, 21, 22, 23, 24, 26, 27, and 28 the scale score of „commitment" was

291   calculated.

292   The mean of the scale "commitment" was 31.0 (SD 8.4) with a median of 30, a minimum

293   of 19, and a maximum of 53 (Figure 1). Its distribution deviated significantly from a

294   normal distribution: Shapiro-Wilk-Test, p<.001; Skewness, p = .003; Kurtosis, p=.35.

295   Cronbach-α coefficient was .90, omega coefficient was .91, the average inter-item-

296   correlation was .37. Discriminatory power of the items ranged from .31 - .79. All values

297   can be classified as satisfactory to high.

298   **Please insert Figure 1 about here.**

299   The mean of the scale personal benefit was 17.9 (SD 4.4) with a median of 18, a

300   minimum of 10, and a maximum of 31 (Figure 2). Its distribution mainly deviated

301   significantly from a normal distribution: Shapiro-Wilk-Test, $p = .02$; Skewness, $p = .02$;

302   Kurtosis, $p = .19$. Cronbach-α coefficient was .81, omega coefficient was also .81, the

303   average inter-item-correlation was .34. Discriminatory power of the items ranged from

304   .33 - .65. All values can be classified as satisfactory to reasonably high.

305   **Please insert Figure 2 about here.**

306   **Association with demographic characteristics**

307   We median dichotomized age of physicians and then compared the two groups on the

308   scales of the MoME-Q. The descriptive values are displayed in Table 4.

309   **Please insert Table 4 about here.**

310

311   There was no significant multivariate effect ($T^2(2,81) = 4.15$, $p = .14$). The two age

312   groups did not differ significantly on the scales of the MoME-Q.

313   We compared those physicians who had an authorization for performing practical

314   education for future GPs with those who did not have this authorization on the scales of

315   the MoME-Q. The descriptive values are displayed in Table 5.

316   **Please insert Table 5 about here.**

317

318   There was a significant multivariate effect (T^2(2,82) = 7.32, p = .03). Univariate analyses

319   revealed a significant difference between the two groups on the subscale personal

320   benefit t(75.6) = -2.62, p = .01. A medium effect was shown by effect size Cohen´s d

321   with .57. Those with authorization to perform practical education for future GPs hope to

322   have more personal benefits than those who do not possess this authorization. No

323   significant difference occurred on the scale commitment t(78.2) = -0.60, p = .55, d = .13.

324   We further compared those practices with a specialized practice nurse or with a practice

325   nurse still in training with those who do not have a specialized practice nurse and who

326   do not intend to have one in the future on the scales of the MoME-Q. The descriptive

327   values are displayed in Table 6.

328   **Please insert Table 6 about here.**

329

330   There was a significant multivariate effect (T^2(2,81) = 7.93, p = .02). Univariate analyses

331   revealed a significant difference between the two groups on the subscale commitment:

332   t(81.9) = 2.82, p = .006. A medium effect was shown by effect size d= .62. Those

333   physicians with a practice nurse show a higher commitment than those physicians who

334   do not have a practice nurse and who do not have the intention to have a practice nurse

335   in the future. There was no significant difference between the two groups on the scale

336   personal benefit: t(75.8) = 0.85, p = .40 with a small effect size of d= .19.

337 We compared those physicians with experience in medical education with those who

338 did not have experience in medical education on the scales of the MoME-Q. The

339 descriptive values are displayed in Table 7.

340 **Please insert Table 7 about here.**

341

342 There was a significant multivariate effect ($T^2(2,82) = 25.93$, $p < .0001$. Univariate

343 analyses revealed a significant difference between the two groups on the subscale

344 commitment: $t(59.2) = -4.74$, $p < .0001$. A large effect was shown by effect size d=1.05.

345 Those physicians with experience in medical education expressed a significantly higher

346 commitment for medical education than those physicians without experience in medical

347 education. There was also a significant difference between the two groups on the scale

348 personal benefit: $t(57.8) = -2.50$, $p = .015$ with a medium effect size of d= .55. Those

349 physicians with experience in medical education expect a higher personal benefit from

350 medical education than those physicians who do not have experience in medical

351 education.

352 **Associations with burnout and work satisfaction**

353 We calculated Spearman correlation coefficients between MoME-Q scales and

354 subscales of the Maslach Burnout Inventory (MBI) (Table 8).

355 **Please insert Table 8 about here.**

356

357 The MoME-Q subscale "commitment" correlated significantly with all three subscales of

358 the MBI. Correlations were in the medium range around |.30|. Those physicians with

359 higher commitment scores and therefore lower commitment to teach had higher scores

360 on emotional exhaustion and depersonalization and vice versa. Those physicians with

361 lower commitment scores and therefore higher commitment to teach had higher scores

362 on the MBI subscale personal accomplishment and vice versa. The correlations of the

363 MoME-Q subscale "personal benefits" with MBI subscales were around zero.

364 **Please insert Table 9 about here.**

365

366 None of the correlations between the MoME-Q subscales and the subscales of the

367 Work Satisfaction Questionnaire reached significance after Bonferroni correction (Table

368 9). The only tendency which can be reported is that those physicians with lower

369 commitment scores and therefore higher commitment to teach are more satisfied with

370 their current job situation and vice versa. A German version of the MoME-Q can be

371 found in the supplement (supplementary table 3).

372

373

Discussion

After taking a model generating approach in confirmatory factor analysis, the MoME-Q
could be best characterized by a two-factor model instead of the initial hypothesis of a
four-factor structure. Factor "commitment" consisted of 16 items with Cronbach-α and
omega-coefficients around .90 while factor "personal benefit" had 8 items with
Cronbach-α and omega-coefficients being around .80.

Mean differences between most groups based on demographic characteristics
demonstrate the validity of the MoME-Q to highlight relevant aspects for the motivation
in medical education. Median dichotomized age groups did not differ significantly in their
scores on the MoME-Q subscales. Physicians with authorization to train GP residents
exspect to have more personal benefits than those who do not possess this
authorization (medium effect size). Physicians with a practice nurse show a higher
commitment to teach than those physicians who do not have a practice nurse and who
do not have the intention to have a practice nurse in the future (medium effect size).
The latter two findings show that GPs who set value on further education of their
employees also tend to teach medical students. Physicians with experience in medical
education expressed a significantly higher commitment for medical education and
expect higher personal benefit than those physicians without experience in medical
education (large and medium effect sizes, respectively). This finding is quite promising
as it shows that GP teachers see the benefit from their efforts and are apt to continue
medical education of students. Correlations with the Maslach Burnout Inventory
revealed that physicians with higher commitment scores and therefore lower
commitment to teach had higher scores on emotional exhaustion and depersonalization

397　and vice versa, which is not suprising. Physicians with lower commitment scores and

398　therefore higher commitment to teach had higher scores on the MBI subscale personal

399　accomplishment and vice versa. Work satisfaction surprisingly was not significantly

400　associated with motivation to teach. The only tendency which can be reported is that

401　those physicians with lower commitment scores and therefore higher commitment to

402　teach are more satisfied with their current job situation and vice cersa.

403

404　The results of our study are promising regarding the project to establish a medical

405　campus in Siegen. The problem to get a sufficient number of GPs involved in teaching

406　purposes to face the challenge of the masterplan 2020 seems solvable. Much more

407　GPs than expected are willing to participate in the medical education process of

408　students, especially compared to the current situation. A total of 83% of the GPs can

409　imagine to participate in medical education. Hence, the willingness to have students in

410　the practice for short terms (i.e. two-week rotations) is higher than for longterm

411　education (i.e. practical year). Teaching students out of the own practice is not wanted

412　by the majority of GPs as this would mean an additional expenditure of time.

413　Nevertheless, the results also show that the willing population of GPs needs preparation

414　and support, e.g. by didactical courses and training programs. In addition, delegation

415　plays a growing role in patient care, especially in rural areas. Courses for non-medical

416　staff (doctor's assistants) are available to become practice nurses that take on more

417　responsibility in patient care. Although investigating a rural area, less than half of the

418　GPs do have practice nurses and what even surprises more is that only 11% of the GPs

419　do have staff members in training to become practice nurses. The reasons for that

420 remain unclear. We can only speculate that the absence of a course offer might lead to

421 this low rate of staff members in training. Currently, courses are only available in a

422 distance of about 100km.

423 Looking at research, the majority can imagine participate in specific research projects.

424 They are basically also willing to recruit patients in the practice, which must be seen as

425 the basis for primary care research.

426 A strength of our study was that we were able to conduct a full population survey in a

427 limited geographic area. The response rate of 53.8 % can be regarded as satisfactory

428 as the survey contained several self-relevant questions regarding own future work

429 prospects and continuity of practices. These are topics, which might cause

430 psychological irritation and might therefore be avoided. This might in turn result in a

431 rejection to participate in a survey containing questions having a possible negative

432 influence on self-esteem (*Harmon-Jones & Harmon-Jones*, 2007). Of course, our study

433 is subject to some limitations. First, the sample size for confirmatory factor analysis was

434 smaller than the proposed n=200 in the literature (*Brown*, 2015) although the resulting

435 solutions had satisfactory quality criteria. Our results regarding the development of the

436 MoME-Q should be replicated with independent and larger samples as we applied a

437 model generating approach in confirmatory factor analysis. This means that the

438 proposed two factorial solution has to be confirmed with different samples in order to be

439 called a stable solution (*Jöreskog*, 1993). Second, GPs were investigated and our

440 conclusions should therefore be restricted to this specific group.

441   As already mentioned above, there is no appropriate tool available to assess the

442   motivation of General Practitioners to teach medical students for the purpose of our

443   study. The study by Thomson et al., where we derived some items from, is a qualitative

444   study. The study group undertook semi-structered interviews with GPs, who do already

445   have teaching experiences (*Thomson* et al., 2014). In the study of Ingham et al.,

446   Australian GPs who are already functioning as GP supervisors were investigated by

447   means of semi-structured interviews (*Ingham* et al., 2015). The article of Dybowski et al.

448   presents the validation of the Physician Teaching Motivation Questionnaire (PTMQ).

449   This questionnaire is more appropriate to assess motivation of physicians who are

450   already involved in teaching, which makes an important difference as we focus on

451   physicians with no or almost no teaching experience. The validation was further done at

452   a study group of hospital-based-physicians who work at university hospitals (*Dybowski*

453   *& Harendza*, 2015), whereas we look at GPs who work in their private practices and

454   who mostly had no prior experiences in teaching medical students.

Conclusion

456   We for the first time present an instrument to assess motivation of GPs with less or no

457   teaching experience to take part in the medical education of students. We could

458   demonstrate that the MoME-Q is an appropriate tool to measure motivation for teaching

459   participation of GPs. Motivation is a complex construct, which is subject to many

460   different influencing factors such as work satisfaction and prior experiences. Future

461   studies with larger number of GPs should be carried out to validate and confirm our

462   findings. Whether the MoME-Q is also appropriate for other specialities should also be

463   shown in further empirical studies.

464   The results of our study are also promising regarding the project to establish a medical

465   campus in a rural region. The problem to get a sufficient number of GPs involved in

466   teaching purposes to face the challenge of the masterplan 2020 seems solvable.

467   Nevertheless, the results also show that the willing population of GPs needs preparation

468   and support, e.g. by didactical courses and training programs.

469   **List of abbreviations**

470   CFI   Comparative Fit Index

471   GP   General Practitioner

472   HaMEdSi   Hausärzte (GPs) for Medical EDucation in Siegen-Wittgenstein

473   kNN   k nearest neighbor algorithm

474   MBI   Maslach Burnout Inventory

475   MoME-Q   Motivation of Medical Education questionnaire

476   PTMQ   Physician Teaching Motivation Questionnaire

477   SD   standard deviation

478   SRMR   standardised root mean square residual

479   TLI   Tucker Lewis Index

480   ULSMV   Unweighted Least Squares Estimator

481 **Ethics approval and consent to participate**

482 The study was performed in accordance with the Declaration of Helsinki and approved

483 by the research ethics committee of the University of Marburg (AZ 127/17). We have

484 obtained informed consent from each study participant.

485 **Consent to publish**

486 Not applicable

487 **Availability of data and materials**

488 All study data and materials are available upon request.

489 **Competing Interests**

490 The authors declare that they have no competing interests.

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496

497 **References**

498 **Beretta L, Santaniello A. 2016.** Nearest neighbor imputation algorithms: A critical

499   evaluation. *BMC Medical Informatics and Decision Making* **16 Suppl 3**:74.

500 **Bortz J, Schuster C. 2010.** *Statistik für Human- und Sozialwissenschaftler: Extras online.*

501   Berlin, Heidelberg: Springer.

502 **Bovier PA, Perneger TV. 2003.** Predictors of work satisfaction among physicians.

503   *European Journal of Public Health* **13 (4)**:299–305.

504 **Brown TA. 2015.** *Confirmatory factor analysis for applied research.* New York, London: The

505   Guilford Press.

506 **Browne KA, Cudeck JS. 1993.** Alternative ways of assessing equation model fit. In: Bollen

507   KA, ed. *Testing structural equation models.* Newbury Park, Calif.: Sage, 136–162.

508 **Bundesministerium für Gesundheit. 2017.** Masterplan Medizinstudium 2020. *Available*

509   *at*

510   *https://www.bundesgesundheitsministerium.de/ministerium/meldungen/2017/maerz/m*

511   *asterplan-medizinstudium-2020.html* (accessed 18 April 2018).

512 **Buxel H. 2009.** *Motivation, Arbeitsplatzzufriedenheit und Jobwahlverhalten von*

513   *Assistenzärztinnen und -ärzten sowie Studierenden der Humanmedizin: Ergebnisse zweier*

514   *empirischer Untersuchungen und Implikationen für das Personalmanagement und -*

515   *marketing von Krankenhäusern.* Münster: Fachhochschule Münster.

516 **Dybowski C, Harendza S. 2015.** Validation of the Physician Teaching Motivation

517   Questionnaire (PTMQ). *BMC Medical Education* **15**:166.

518 **Grissom RJ, Kim JJ. 2012.** *Effect sizes for research: Univariate and multivariate*

519   *applications.* New York: Routledge.

520 **Gumz A, Erices R, Brähler E, Zenger M. 2013.** Faktorstruktur und Gütekriterien der

521   deutschen Übersetzung des Maslach-Burnout-Inventars für Studierende von Schaufeli

522   et al. (MBI-SS). *Psychotherapie, Psychosomatik, Medizinische Psychologie* **63 (2)**:77–84.

523 **Hair JF. 2010.** *Multivariate data analysis: A global perspective.* Upper Saddle River, NJ:

524   Pearson.

525 **Harmon-Jones E, Harmon-Jones C. 2007.** Cognitive Dissonance Theory After 50 Years of

526   Development. *Zeitschrift für Sozialpsychologie* **38 (1)**:7–16.

527 **Ingham G, Fry J, O'Meara P, Tourle V. 2015.** Why and how do general practitioners

528   teach? An exploration of the motivations and experiences of rural Australian general

529   practitioner supervisors. *BMC Medical Education* **15**:190.

530 **Jacob R, Kopp J, Schulz S. 2015.** Berufsmonitoring Medizinstudenten 2014 - Ergebnisse

531   einer bundesweiten Befragung. *Available at*

532   *http://www.kbv.de/media/sp/2015_04_08_Berufsmonitoring_2014_web.pdf* (accessed 18

533   April 2018).

534 **Jöreskog KG. 1993.** Testing structural equation models. In: Bollen KA, ed. *Testing*

535   *structural equation models.* Newbury Park, Calif.: Sage, 294–316.

536 **Kim Y, Kim T-H, Ergün T. 2015.** The instability of the Pearson correlation coefficient in

537   the presence of coincidental outliers. *Finance Research Letters* **13**:243–257.

538 **Kowarik A, Templ M. 2016.** Imputation with the R Package VIM. *Journal of Statistical*

539   *Software* **74 (7)**.

540 **Kunter M., Klusmann U, Baumert J, Richter D, Voss T, Hachfeld A. 2013.** Professional

541   competence of teachers: effects on instructional quality and student development.

542   *Journal of Educational Psychology* **105**:805–820.

543 **Kusurkar RA, Cate TJ, Vos CM** ten, **Westers P, Croiset G. 2013.** How motivation affects

544 academic performance: a structural equation modelling analysis. *Advances in Health*

545 *Sciences Education* **18**:57–69.

546 **Lei P-W, Wu Q. 2015.** Estimation in Structural Equation Modeling. In: Hoyle RH, ed.

547 *Handbook of structural equation modeling.* New York, NY: Guilford Press, 164–180.

548 **Lenz K, Wolter A, Reiche C, Fuhrmann M, Frohwieser D, Otto M, Pelz R, Vodel S. 2010.**

549 *Studium und Berufseinstieg. Ergebnisse der ersten Sächsischen Absolventenstudie.*

550 Dresden: Technische Universität Dresden.

551 **Little TD, Kline RB, eds. 2016.** *Principles and practice of structural equation modeling.*

552 New York, London: The Guilford Press.

553 **Ministerium für Gesundheit, Emanzipation, Pflege und Alter des Landes Nordrhein-**

554 **Westfalen. 2016.** Gemeinden, in denen die hausärztliche Versorgung auf mittlere Sicht

555 gefährdet erscheint. *Available at*

556 *https://www.mags.nrw/sites/default/files/asset/document/hap_anlage_3_nov_2016_gefa*

557 *ehrdet.pdf* (accessed 18 April 2018).

558 **Ministerium für Gesundheit, Emanzipation, Pflege und Alter des Landes Nordrhein-**

559 **Westfalen. 2017.** Gemeinden, in denen die Gefährdung der hausärztlichen Versorgung

560 droht. *Available at*

561 *https://www.mags.nrw/sites/default/files/asset/document/hap_anlage_2_nov_2016_dro*

562 *ht.pdf* (accessed 18 April 2018).

563 **Neubach B, Schmidt K-H. 2000.** Gütekriterien einer deutschen Fassung des Maslach

564 Burnout Inventory (MBI-D) - Eine Replikationsstudie bei Altenpflegekräften. *Zeitschrift*

565 *für Arbeits- und Organisationspsychologie A&O* **44 (3)**:140–144.

566 **Radel R, Sarrazin P, Legrain P, Wild T. 2010.** Social contagion of motivation between

567 teacher and student: analyzing underlying processes. *Journal of Educational Psychology*

568 **102**:577–587.

569 **Raykov T. 2001.** Estimation of congeneric scale reliability using covariance structure

570 analysis with nonlinear constraints. *British Journal of Mathematical and Statistical*

571 *Psychology* **54 (2)**:315–323.

572 **Rosseel Y. 2012.** lavaan: An R Package for Structural Equation Modeling. *Journal of*

573 *Statistical Software* **48 (2)**:1–36.

574 **Roth G, Assor A, Kanat-Maymon Y, Kaplan H. 2007.** Autonomous motivation for

575 teaching: how self-determined teaching may lead to self-determined learning. *Journal of*

576 *Educational Psychology* **99**:761–774.

577 **Schwarzer R, Schmitz GS, Tang C. 2000.** Teacher burnout in Hong Kong and Germany: A

578 cross-cultural validation of the Maslach Burnout Inventory. *Anxiety, Stress & Coping*

579 **13**:309–326.

580 **Thomson J, Haesler E, Anderson K, Barnard A. 2014.** What motivates general

581 practitioners to teach. *The Clinical Teacher* **11 (2)**:124–130.

582 **Töpfer A, Silbermann S, Maertins A. 2011.** Ökonomische und nicht-ökonomische

583 wirkungen einer medizinischen einrichtung. *Zeitschrift fur Evidenz, Fortbildung und*

584 *Qualitat im Gesundheitswesen* **105 (10)**:701–707.

585 **Universität Siegen.** Freude über Vertrauen. *Available at https://www.uni-*

586 *siegen.de/start/news/oeffentlichkeit/767525.html* (accessed 18 April 2018).

587 **Wayne AJ, Youngs P. 2003.** Teacher characteristics and student achievement gains: a

588 review. *Review of Educational Research* **73**:89–122.

589 **Weiber R, Mühlhaus D. 2014.** *Strukturgleichungsmodellierung [Structural equation*

590 *modeling]: Eine anwendungsorientierte Einführung in die Kausalanalyse mit Hilfe von*

591 *AMOS, SmartPLS und SPSS [An introduction into causal analysis with the help of AMOS,*

592 *SmartPLS, and SPSS].* Berlin: Springer Gabler.

593 **West SG, Taylor AB, Wu W. 2015.** Model Fit and Model Selection in Structural Equation

594 Modeling. In: Hoyle RH, ed. *Handbook of structural equation modeling.* New York, NY:

595 Guilford Press, 209–231.

596 **Zumwalt K, Craig E. 2005.** Teachers' characteristics: research on the indicators of quality.

597 In: Cochran-Smith M, Zeichner KM, eds. *Studying teacher education: The report of the*

598 *AERA Panel on Research and Teacher Education.* New York, London: Routledge Taylor &

599 Francis Group, 157–260.

600

Table 1(on next page)

Demographic characteristics of study participants (n=85)

1   **Table 1.** Demographic characteristics of study participants (n=85)

General characterictics	
Gender	75% male 25% female
Practice ownership	92% practice owners 8% practice employees
Specialization	52% General Practice 25% Internal Medicine 20% General Practice and Internal Medicine 3% none
Practice size	33% single practice 67% group practice
Modus of work	91% full-time 9% part-time
Would become GP again	94% yes 6% no
Teaching experience	
Cooperation with medical school / status of an adacemic teaching practice	14% yes 86% no
Any preexisting teaching experience	59% yes 41% no
One-day observation	45%yes 55% no
Two-week rotation	17% yes 83% no
clinical elective	57% yes 43% no
Practical Year	11% yes 89% no
Lectures at a university	3% yes 97% no
Visited didactics training within last 2 years	6% yes 94% no
Perspectives on participation in education of medical students	
Would become active in the training of medical students in Siegen	83% yes 17% no

One-day observation	80%yes
	20% no
Two-week rotation	74% yes
	26% no
clinical elective	68% yes
	32% no
Practical Year	58% yes
	42% no
Lectures at a university	34% yes
	66% no
Participation in research projects	68% yes
	32 % no
Recruitment of patients in practice	57% yes
	43% no
Qualification of non-medical staff	
Practice nurse	39% yes
	61% no
Number of practice nurses	77% 1
	16% 2
	7% 4
Staff member currently doing the practice nurse curriculum	11% yes
	89% no
Number of staff members currently doing the practice nurse curriculum	56% 1
	44% 2
Staff member planning to do the curriculum	35% yes
	65% no

2

3

4

Table 2(on next page)

Descriptive statistics of the remaining 24 items of the MoME-Q.

1 **Table 2.** Descriptive statistics of the remaining 24 items of the MoME-Q.
2

	Mean	SD	Median	Skewness	Kurtosis
Item 1	1.46	.73	1	1.63 (p<.001)	2.28 (p<.001)
Item 2	1.88	.75	2	0.52 (p=.03)	-0.08 (p=.44)
Item 3	1.61	.71	1	0.93 (p<.001)	0.39 (p=.23)
Item 4	1.46	.65	1	1.10 (p<.001)	0.11 (p=.42)
Item 5	2.12	.84	2	0.36 (p=.09)	-0.42 (p=.22)
Item 6	2.42	.86	2	0.07 (p=.39)	-0.61 (p=.13)
Item 7	2.44	.91	2	0.00 (p=.50)	-0.76 (p=.08)
Item 9	2.55	.82	3	0.05 (p=.43)	-0.51 (p=.17)
Item 10	2.06	.86	2	0.45 (p=.04)	-0.45 (p=.20)
Item 11	2.01	.88	2	0.66 (p=.007)	-0.12 (p=.42)
Item 13	2.39	.77	2	0.31 (p=.12)	-0.18 (p=.37)
Item 14	1.85	.75	2	0.77 (p=.002)	0.80 (p=.07)
Item 16	2.13	1.02	2	0.35 (p=.09)	-1.08 (p=.02)
Item 17	2.62	1.01	3	-0.17 (p=.26)	-1.04 (p=.03)
Item 18	3.58	.73	4	-1.97 (p<.001)	3.87 (p<.001)
Item 19	3.19	.84	3	-0.74 (p=.003)	-0.20 (p=.36)
Item 20	2.85	.85	3	-0.29 (p=.14)	-0.56 (p=.15)
Item 21	2.32	.69	2	0.14 (p=.30)	-0.08 (p=.44)
Item 22	2.96	.68	3	-0.42 (p=.06)	0.54 (p=.16)
Item 23	2.85	.87	3	-0.37 (p=.08)	-0.47 (p=.19)
Item 24	2.34	1.13	2	0.25 (p=.17)	-1.32 (p=.007)
Item 26	3.44	.88	4	-1.31 (p<.001)	0.46 (p=.19)
Item 27	3.58	.75	4	-1.77 (p<.001)	2.47 (p<.001)
Item 28	3.09	1.03	3	-0.79 (p=.001)	-0.62 (p=.12)

3

4

Table 3(on next page)

Factor loadings of the two-factor solution in the confirmatory factor analysis.

1   **Table 3.** Factor loadings of the two-factor solution in the confirmatory factor analysis.

	factor loading
Factor commitment	
Item 1	.78
Item 2	.64
Item 3	.85
Item 4	.67
Item 16	.54
Item 17	.39
Item 18	-.54
Item 19	-.56
Item 20	-.57
Item 21	-.36
Item 22	-.48
Item 23	-.84
Item 24	-.53
Item 26	-.64
Item 27	-.81

Item 28	-.53
Factor personal benefit	
Item 5	.58
Item 6	.66
Item 7	.53
Item 9	.51
Item 10	.80
Item 11	.46
Item 13	.43
Item 14	.70

2

3

Table 4(on next page)

Descriptive values of the MoME-Q scales split by age groups.

1 **Table 4.** Descriptive values of the MoME-Q scales split by age groups.

	commitment mean (sd)	personal benefit mean (sd)
age < median (n=42)	29.8 (7.4)	16.9 (4.3)
age ≥ median (n=42)	31.8 (9.1)	18.8 (4.4)

2
3

Table 5(on next page)

Descriptive values of the MoME-Q scales split by authorization for performing practical education for GPs.

1   **Table 5.** Descriptive values of the MoME-Q scales split by authorization for performing

2   practical education for GPs.

	commitment mean (sd)	personal benefit mean (sd)
authorization (n=45)	30.5 (7.9)	16.7** (3.8)
no authorization (n=40)	31.6 (9.0)	19.1** (4.7)

3   ** p=.01
4

Table 6(on next page)

Descriptive values of the MoME-Q scales split by practices with and without a specialized practice nurse.

1   **Table 6.** Descriptive values of the MoME-Q scales split by practices with and without a

2   specialized practice nurse.

	commitment mean (sd)	personal benefit mean (sd)
no practice nurse (n=45)	33.4* (8.5)	18.3 (4.1)
practice nurse (n=39)	28.4* (7.6)	17.4 (4.8)

3   * p=.02

4

Table 7(on next page)

Descriptive values of the MoME-Q scales split by physicians with and without experience in medical education.

1   **Table 7**. Descriptive values of the MoME-Q scales split by physicians with and without

2   experience in medical education.

	commitment mean (sd)	personal benefit mean (sd)
experience (n=50)	27.6*** (6.4)	16.8 (3.6)
no experience (n=35)	35.8*** (8.7)	19.3 (5.0)

3   ***$p<.0001$

4

Table 8(on next page)

Spearman correlations of the MoME-Q scales with subscales of the Maslach Burnout Inventory (MBI). Due to multiple testing the significance level had to be adjusted to p=.05/6=.008.

1   **Table 8.** Spearman correlations of the MoME-Q scales with subscales of the Maslach

2   Burnout Inventory (MBI). Due to multiple testing the significance level had to be

3   adjusted to p=.05/6=.008.

MBI MoME-Q	emotional exhaustion	depersonalization	personal accomplishment
commitment	.30	.33	-.35
	p=.006	p=.001	p=.002
personal benefit	.08	.03	-.08
	p=.44	p=.75	p=.46

4
5

Table 9(on next page)

Spearman correlations of the MoME-Q scales with subscales of the Work Satisfaction Questionnaire. Due to multiple testing the significance level had to be adjusted to p=.05/12=.004.

1 **Table 9.** Spearman correlations of the MoME-Q scales with subscales of the Work

2 Satisfaction Questionnaire. Due to multiple testing the significance level had to be

3 adjusted to p=.05/12=.004.

MoME-Q	patient care	burden	income-prestige	personal rewards	professional relations	global item
commitment	-.19	.01	.01	-.15	-.10	-.25
	p=.08	p=.95	p=.93	p=.17	p=.37	p=.02
personal benefit	-.03	.09	.07	-.09	.02	-.03
	p=.76	p=.44	p=.53	p=.42	p=.83	p=.76

4
5

Figure 1(on next page)

Distribution of the commitment subscale scores of MoME-Q.
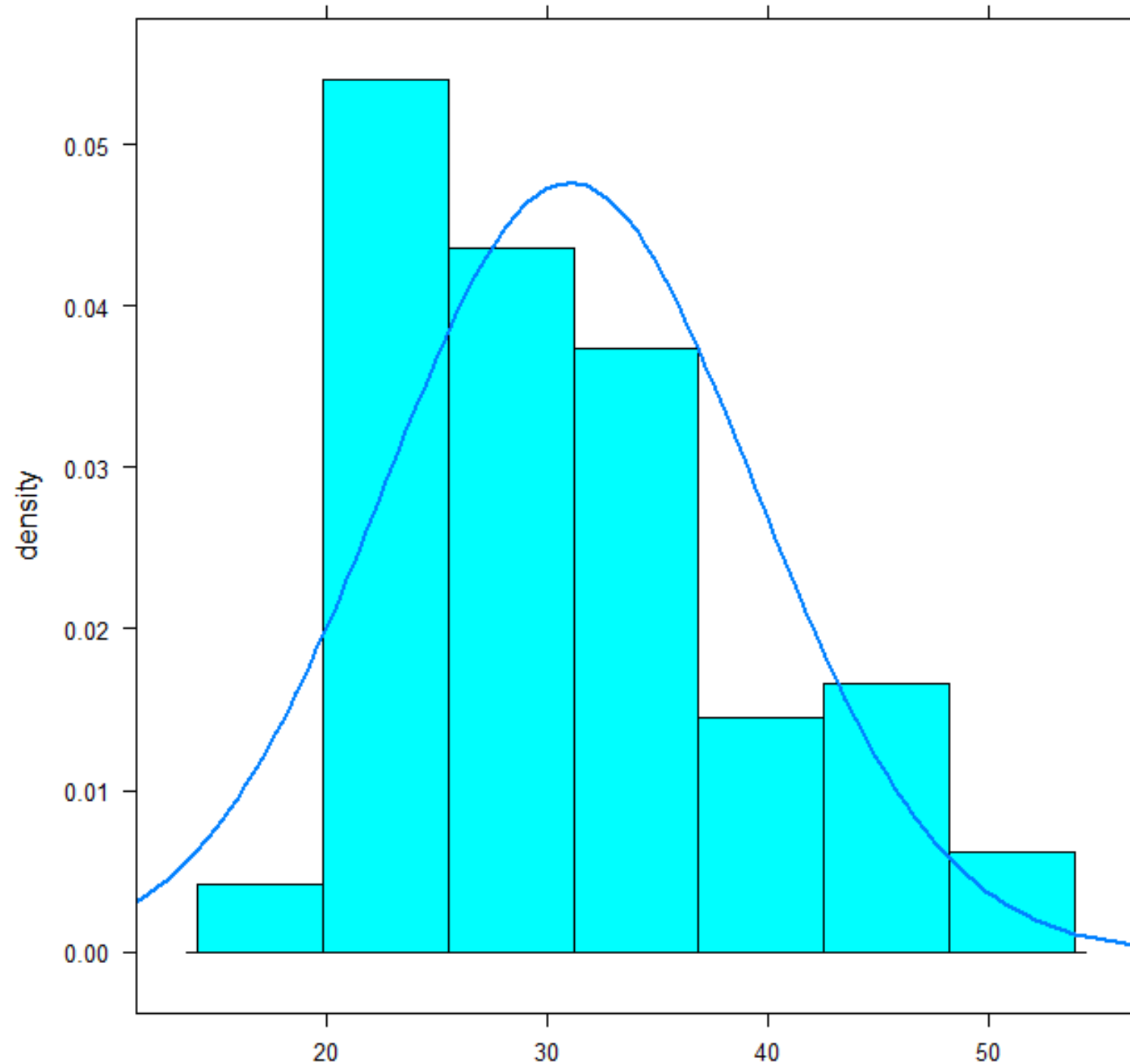
Figure 2(on next page)

Distribution of the personal benefit subscale scores of MoME-Q.