

5 Current and Future Health Professionals as “Role Models” for Patients (Clients) – Implications for the Health Promotion Programme

Health behaviours are an important topic of study for modern public health. They are the main factors contributing to lifestyle diseases which, as diseases of a chronic character, effectively reduce the quality of life and are the leading causes of death among residents of developed countries. Health professionals are perceived as individuals who are competent to give advice and support patients (customers) in overcoming health compromising behaviours and adopting health – promoting ones. They enjoy the considerable social trust, particularly in the field of fighting diseases. But when it comes to help in changing lifestyle, the matter is not so obvious (Hawe et al., 2010).

In Poland, as in many other countries, health professionals enjoy a high level of social trust and medical studies are considered among the most prestigious academic disciplines. However, this recognition is not equal among all the professionals. Clearly, physicians are considered the most prestigious profession. In contrast, even though nurses and physiotherapists also follow higher education they are referred to as medical support personnel. This type of gradation results from professional competence determined by the rules of law and is also reflected in the size of the public trust or its determinant from patients.

Apart from pedagogical and social skills or professional knowledge, medical personnel lifestyle can affect the image of a person’s competence. Most probably, smoking, obese physicians or nurses will not be credible while giving advice concerning risk factors associated with lifestyle. If a specialist is not strong and determined enough to follow the guidelines, it is difficult for the patient to be convinced of them (Abramson, Stein, Schaufele, Frates, & Rogan, 2000; Frank, Bhat, & Elon, 2003). Therefore, this study analysed health behaviours of the current and future medical staff to assess their potential for educational activities related to health.

5.1 Physical Activity

When comparing the research results with those from the published literature, different methodology for assessing physical activity presented in the available EU reports or studies should be taken into consideration. As a result, direct comparisons are restricted and have an indicative character. Physical activity of the respondents decreases with age and significantly differentiates students and professionals; this is the well-documented direction of changes in physical activity (Sport and Physical Activity, 2010; Troiano, Berrigan, Dodd, Masse, Tilert, & McDowell, 2008). Physical activity of students is higher than that of professionals, but based on the trend in

lifelong physical activity we can expect that it will probably decrease after graduation. Similarly, the physiotherapist profession distinguished itself by increased physical activity both during study and professional work. Such results could have been expected and the differences are already noticeable at the level of studies (Hops et al., 2009). This profession requires higher physical fitness and has been recently studied mainly at universities of physical education which are associated with exercise, activity and physical fitness.

However, another type of observation is important, namely the one associated with physical activity taken up by the current and future medical staff. Fewer than 40% of the respondents (physicians and nurses) engage in physical activity intensely enough to develop healthy lifestyles. The findings are similar to the studies on physicians in Poland (Gacek, 2011). Overall in students, 48% of medical students and more than 60% of physiotherapy students show satisfactory frequency of physical activity. Another study indicates that 40% of the adult population in Poland regularly undertake physical activity (Aktywność fizyczna Polaków, 2013). Higher education generally promotes physical activity (Cotter & Lachman, 2010; Dowda, Ainsworth, Saunders, & Riner, 2003) though it's not always so obvious, particularly in transition countries such as Poland. As a result, the percentage values obtained for physically active Poles with higher education vary in different studies. The medical community, especially physicians, belong to the occupational group that has acquired opportunities for rapid economic development associated with the necessity for additional workload and employment. At the same time, physical activity of this occupational group is mainly associated with leisure time. Consequently, physicians have fewer opportunities to catch up on a backlog and undertake a recommended level of daily physical activity. Similarly we have observed the low physical activity of physicians in Europe (Pardo, 2012) and osteotherapists in the United States (McNerney, Andes, & Blackwell, 2007). On the other hand, nurses as well as physiotherapists have more physically demanding work. In addition, physiotherapists are equipped with skills that let them spend their leisure time actively and they also have the need for movement, formed during their studies. Regular physical activity is declared by more than 50% of the respondents, 54% of students and 45% of professionals, including approximately 40% of physicians. The findings are similar to those obtained by Puciato, Rozpara, Mynarski, Łoś and Krolikowska (2013) for this professional group in Poland. Hence, it is hard to avoid the conclusion that, even though having appropriate health-related knowledge and beliefs about the crucial role of physical activity, the examined occupational groups (particularly physicians and nurses) don't implement them in their own personal lives (more than 50% of them). Conversely, American and Canadian physicians are more likely to be physically active than the general population (Frank et al., 2003, Frank & Segura, 2009).

Based on the analysis of the subjective and social determinants of physical activity among the respondents, it appears that the most important ones are as follows: high physical activity self-efficacy, low Chance Health Locus of Control,

good Self-rated Health, BMI within a normal range and belonging to one of the studied socio-economic groups: physiotherapists or physiotherapy students. Taking into account that above mentioned determinants appear in the literature, the results are rather unsurprising. Exercise self-efficacy is revealed as the strongest predictor of continued exercise behaviour (Armitage & Conner, 2001). Self-rated Health is also a good predictor of physical activity, especially leisure time (Galána, Meseguer, Herruzo, & Rodriguez-Artalejo, 2010). Results in the studies investigating the relationships between the physical activity and health locus of control were similar, but not necessarily always the same. High Chance Health Locus of Control and high Powerful Others Health Locus of Control contribute to low physical activity while high Internal Health Locus of Control to high physical activity (Grotz, Hapke, Lampert, & Baumeister, 2011; Helmer, Krämer, & Mikolajczyk, 2012; Steptoe & Wardle, 2001).

From the perspective of a potential promotion programme directed to those socio-economic groups, the use of the skills and social competence training can be recommended, particularly focused on the belief in the possibility of dealing with potential obstacles in the organisation and implementation of physical activity necessary for various health benefits. Interestingly, a strong belief that our health does not depend on external factors such as chance or fate, strengthens the ability to cope with adversity and personal weakness in the moment of taking a challenge of increasing physical activity. The relationship between high Internal Health Locus of Control and physical activity is similar. These are not constructs which can be easily controlled or modified in adults. However, just facing the role of the mentioned psychological dispositions in personal decisions regarding health may be a valuable learning experience for the potential recipients of the programme, i.e. in this case, the future or present medical staff. Taking into account the predictive value associated with physical activity, the determination of Health Locus of Control should be also a part of assessment of the programme participants. The programmes dedicated to the increase of physical activity should be addressed in particular to such professional groups as physicians, nurses and medical students.

5.2 Nutrition

The nutrition behaviours of the respondents were analysed in two ways: taking 12 elements of proper diet into account (NI12) and taking 3 important diet elements, namely the consumption of vegetables, fruits and complex carbohydrates, into account (NI3). As it has been revealed, almost 60% of men and 65% of women in Poland consume fruits and vegetables on a daily basis – these results are close to the average for the population in Europe, whereas slightly more than 70% of the Polish population with higher education implements these recommendations (OECD, 2012). However, the research conducted by the Polish Public Opinion Research Center on

a representative sample shows that the percentages are in fact much lower. In 2010 there was about 37% of those eating vegetables and 38% of those eating fruits every day (Dietary Behaviours and Eating Habits of Poles, 2010). In the group of present and future medical personnel, vegetables and fruits are consumed by 45% and 40%, respectively. The consumption of vegetables and fruits, as well as general eating habits, improve with the age of the respondents which is the opposite of what happens in relation to physical activity. College is a salient transition period for health behaviour change in young adults (Harris, Gordon-Larson, Chantala, & Udry, 2006). On the other hand, eating habits of students both in the US and in Europe get worse (Chourdakis et al., 2011; Deliens, Clarys, Van Hecke, De Bourdeaudhuij, & Deforche, 2013; Lloyd-Richardson, Lucero, DiBello, Jacobson, & Wing, 2008). This may partially be explained by the fact that students leave home, begin a more independent life away from their parents, experience more freedom in deciding about their own lifestyles, and hence, “get a taste of student life” (Deliens, Clarys, De Bourdeaudhuij, & Deforche, 2014). Medical students are expected to have better eating habits than non-medical students (Kagan & Squires, 1984). However, the research shows that the results may be quite opposite to what is expected (Sakamaki, Toyama, Amamoto, Liu, & Shinfuku, 2005).

The highest percentage of those consuming fruit and vegetables on a daily basis can be found among physicians while the average percentage is found among physiotherapists and the lowest percentage among nurses. The results obtained for physicians are definitely worse than those in the research by Gacek (2011), though she analysed mainly interns who are known as the best role models in terms of lifestyle. It is difficult to say whether current medical and physiotherapy students will eat better in the future. Having a more stable life as well as being economically established and being of a higher socio-economic status after commencing work, all contribute to healthier eating habits (Dijkstra, Neter, Brouwer, Huisman, & Visser, 2014; Giskes et al., 2006; Malon et al., 2010). However, based on the analysis of variability in health habits in the past 15 years among students of the University School of Physical Education in Poznań we can observe a slight downward trend which means a decrease in the number of people with a particularly beneficial lifestyle and an increase in the number with a moderately beneficial lifestyle. The percentages of students with visibly negative patterns are rather stable (Laudańska-Krzemińska, unpublished). At the same time, Polish students have worse health indicators than students in Western Europe (Steptoea & Wardle, 2001). As a result, it is difficult to draw any encouraging conclusions.

The highest percentage of those who adopt beneficial dietary patterns can be observed among the surveyed physicians and as regards the three main diet elements (NI3) also among physiotherapists. Is it enough to stand out in comparison to the population of working Poles? Depending on the research used as a point of reference, the comparison is very unfavourable (ODCE, 2012) for the surveyed personnel or moderately unfavourable (Dietary Behaviours and Eating

Habits of Poles, 2010). Irrespective of the point of reference, the adopted patterns of health behaviours can hardly be considered exemplary for patients or clients. US women physicians' diets were also worse than those of other women of high socio-economic status (Frank, Brogan, Mokdad, Simoes, Kahn, & Greenberg, 1998).

During the search for subjective and social determinants of eating habits in the group of medical personnel participating in the study, the following were shown to be the most significant ones: high nutrition self-efficacy, low Powerful Others Health Locus of Control, high Self-rated Health, BMI within normal limits, and belonging to one of the surveyed professional groups (nurses, physiotherapists, physicians). Just like in the case of physical activity, the results obtained confirm the factors indicated in the literature to be related to dietary habits of adults. Self-efficacy determines the initiation, maintenance and cessation of strategies or behaviours, thus being a good predictor of eating behaviour (Conn, 1997, Strecher, DeVellis, Becker, & Rosenstock, 1986). A study that focused on promotion of self-regulatory skills in severely obese adults found that as these skills increased, so did perceived self-efficacy in relation to controlled eating, which in turn was associated with BMI change (Annesi & Gorjala, 2010). Shaikh and colleagues (2008) found strong evidence for self-efficacy, social support and knowledge as predictors of adult consumption of vegetables and fruits. Evidence from the literature on cognitive self-regulation suggests that there may be potential for people to learn to self-regulate better, both through training and controlled exposure techniques in order to support effective weight control, both in clinical and community settings (Johnson, Pratt, & Wardle, 2012). Higher Powerful Others Locus of Control and higher Chance Health Locus of Control are associated with not paying attention to health nutrition among German students (Helmer et al., 2012), but it was also demonstrated that high Internal Health Locus of Control was associated with better diet (Bennett, Moore, Smith, Murphy, & Smith, 1994). Persons with better eating habits, especially those who are not overweight or obese, tend to rate their health better (Molarius et al., 2006).

From the perspective of the promotion programme, a main focus should be on social competencies necessary to deal with obstacles to the implementation of beneficial eating habits. Interestingly, the respondents who reluctantly gave control over their health to medical service specialists (or who did not perceive such specialists as totally responsible for their health conditions), adopted better dietary habits, though this applies mainly to physicians and physiotherapists and rarely nurses. Therefore, the determination of health locus of control seems to be very well founded. A special promotional support is required by students in the fields subject to analysis. American trends show that even if indicators and effects of bad eating habits are observed slightly less often compared to the general population they are still only at a slightly lower level, which poses a big challenge from the perspective of health of health care workers (McNerney et al., 2007).

5.3 Smoking

Cigarette smoking is one of the most harmful habits. In Poland, intensive efforts to reduce its volume and toxicity were undertaken through invoking the relevant legislation and organising promotional campaigns. Over the past decade the number of smokers decreased by almost 14% (OECD, 2012). According to the OECD data, in 2010 approximately 24% of Poland's population smoke cigarettes (18% of women and 31% men). The study results of NATPOL 2011 are slightly higher - they show that 27% of residents smoke (23% of women and 31% men). Introducing a smoking ban in public places in 2010 also improved the situation. About 11% of people quit smoking alone or know people who quit smoking under the impact of the new legislation in this area (Postawy wobec palenia papierosów, 2012). However, despite some fluctuation (e.g. a decreasing percentage of men, but at the same time an increasing percentage of women), over the last few years roughly 30% of residents smoke.

Among the current and future medical staff respondents in this study, the observed trend is toward an increasing proportion of professionals who smoke, especially nurses. Similarly, negative results in this occupational group were obtained in studies run by Gańczak, Szych and Karakiewicz (2012) and Zysnarska, Bernad and Kara (2007) although the respondents in those studies grew up in conditions of greater social acceptance of smoking.

The proportion of daily smokers in the early 1990s was 51% among men and 25% among women (Stan zagrożenia, 2009). For young people at the time statistics were as follows: 50% of men and 30% of women. In the early 1980s the physician community stood out particularly negatively. Percentage values of smokers regarding gender among the group were, male physicians (43%) and female physicians (36%) – it was partially explained by poor knowledge about the negative health effects of smoking at that time. This situation began to improve in this professional group and in 2000 the percentage of smokers among physicians, in both sexes were: male physicians – 25% and female physicians – 15% (Stan zagrożenia, 2009). In the present study, as in Gańczak et al. (2012), there are 18% of smokers among physicians. Thus, we can expect favourable trends in cigarette smoking among current medical students. The increased rate of smoking in professionals probably results from their experiences in early youth and may not be prognostic for current medical students, the group with the percentage of smokers reaching approximately 14%. Comparing this study's results to the statistics about 5 years ago, a slight overall decline in smoking medical students (Siemińska et al., 2006) can be observed which is significantly lower than in the general population of students (where the rate is near 30%) (Rasińska & Nowakowska, 2012; Łaszek, Nowacka, & Szatko, 2011). Irrespective of that fact, the current medical staff being responsible for the health of Poles, especially nurses and physiotherapists, they do not compare favourably when it comes to their attitude towards smoking – the percentage of smokers in this group is similar to or even higher than average within the population of Poland (OECD, 2012). Lower percentages of

smokers are also observed among physicians and physiotherapists from the United States, Canada and some Western European countries (Bazargan, Makar, Bazargan-Hejazi, Ani, & Wolf, 2009; Bolinder, Himmelman, & Johansson, 2002; DuMonthier, Haneline, & Smith 2009; Frank & Segura 2009; Frank et al., 1998; Smith & Leggat, 2007). However, American medical students smoke more frequently than physicians (Hull, DiLalla, & Dorsey, 2008).

When it comes to social and subjective determinants that lead to tobacco addiction, the most important among the respondents is smoking self-efficacy, which is observed in other studies (Van Zundert, Ferguson, Shiffman, Saul, & Rutger, 2010). In contrast, we observe a different kind of relationship between low Powerful Others Health Locus of Control (related to the medical authorities' responsibility for our health) and smoking to which such low Powerful Others Health Locus of Control contributes. Faith in the specialists' assurances and the desire to entrust health to them help to avoid a smoking habit, similar to having a strong belief in personal responsibility for health. In the Grotz et al. (2011) study of smokers, those scoring high on the Powerful Others scale had made more attempts to stop smoking and persons scoring high on the Internal Scale smoked more frequently. In the studies conducted by Helmer et al. (2012) higher ratings in the Chance Health Locus of Control dimension were associated with a higher likelihood of being a current smoker. These inconsistencies in findings are in line with previous studies, which also found either insignificant or inconsistent results and rather small effects, especially for the internal dimension (Norman, Bennett, Smith, & Murphy, 1998; Steptoe & Wardle, 2001a; Wardle & Steptoe, 2003). As a result, these skills should be reinforced in educational programmes targeted especially to the current professionals.

5.4 Alcohol Consumption

Excessive alcohol use is associated with the negative health consequences, both in terms of morbidity and mortality (Rehm et al., 2009, WHO Europe, 2012a). In Europe, we note the highest rates of alcohol consumption in the world. In some countries it increases while decreases in other ones, hence the European mean is quite stable. In Poland, over the last 20 years a significant decrease in alcohol consumption was recorded (OECD, 2012). Unfavourable alcohol consumption particularly relates to young people currently studying (Karam, Kyprosd, & Marianac, 2007). On the one hand, it is quite characteristic of this period of life (Arnett, 2005; White, McMorris, Catalano, Fleming, Haggerty, & Abbott, 2006), on the other hand, it is a behaviour which leads to addiction. Among the students in this study, 38% of medical students and 28% of physiotherapy students admitted to the unfavourable pattern of alcohol consumption. These values are similar to those obtained by Łaszek et al. (2011) and much lower than the results of Bielska, Kurpas, Marcinowicz, Owłasiuk, Litwiejko and Wojtal (2012) – as measured by other research tools. In studies conducted on

chiropractic students in the United States, binge drinking was also identified as a problem (DuMonthie et al., 2009, Baldwin et al., 2008). Harmful effects of alcohol consumption significantly less frequently occur among health professionals, which does not mean that it is a marginal problem as it relates to 21% of physicians and physiotherapists and 9% of nurses. In Poland, the number of addicted physicians may amount to approximately 12,000 (Woronowicz, 2010). In a study conducted at the Medical University of Poznan, more than 17% of employees declared alcohol consumption (Ziemska & Marcinkowski, 2010), with the rate in physicians of 28% (Ziemska, 2012). This is a very delicate and controversial subject, possibly even taboo for the medical community in Poland. Hazardous drinking among physicians (especially men) is also noticeable in the USA and Western Europe and concerns approximately 10% – 30% of them (McAuliffe, Rohman, Breer, Wyshak, Santangelo, & Magnuson, 1991; Oreskovich et al, 2012; Rosta & Aasland, 2013; Sebo, Gallacchi, Goehring, & Beat, 2007).

Among the social and subjective determinants investigated in the study, the most important are: alcohol self-efficacy, high Internal Health Locus of Control, high Chance Health Locus of Control and low Powerful Others Health Locus of Control. Findings indicate consistently that lower self-efficacy for avoiding alcohol is predictive of greater consumption (Atwell, Abraham, & Duka, 2011; Gilles, Turk, & Fresco, 2006). In the literature also the impact of these subjective competencies on alcohol consumption is highlighted. However, the results of different studies are not always consistent. For example, as the current studies have shown, a high Chance Health Locus of Control reduces the chance of risky drinking while in the studies of various groups of young people an inverse relationship was observed (Helmer et al., 2012; Steptoe & Wardle, 2001b). The results of the current study were probably influenced by the dominance of this type of control among nurses, characterised by the highest proportion of alcohol abstainers. Similarly, in the study by Grotz et al. (2011) persons scoring high on the Internal Health Locus of Control Scale were less frequent consumers of moderate to higher levels of alcohol. The results of the Powerful Others Health Locus of Control Scale are also inconsistent. In this study, high Powerful Others Health Locus of Control score are associated with higher chances of risky drinking whereas in the study conducted by Steptoe and Wardle (2001b) high values on this scale implied a decrease in those chances. Again, it brings us to a conclusion that medical staff do not behave in accordance with generally observed trends in terms of control of health and its relationships with the selected behaviours, particularly the risky ones. In designing educational activities it is important to be very careful to tailor them to individual needs.

Promotion programmes concerning the excessive alcohol consumption can have a preventive character, but in the case of alcoholism the relevant treatment and therapeutic procedures are used while education plays here a supporting function. The current study gives recommendations for prevention programmes. In particular, it highlights the need to include the training of social competence and determination

of the health locus of control in such programmes since people who have a strong sense of control over their own health or high Chance Health Locus of Control such as fate, God or divine forces abuse alcohol significantly less (this is especially the case amongst nurses). Also people who believe that their health does not depend on health professionals are less likely to have a tendency to abuse alcohol, too. Special care should be taken of medical students.

5.5 Co-Existence & Clusters

The study focused in particular on the identification and better understanding of relationships within multiple risk behaviours. It is one of the currently postulated directions of research exploration that is to facilitate more effective educational activities (Prochaska, 2014). As it has been revealed, a single behaviour-related risk factor in individuals is currently rare; it is more common to have a set of risk factors. Therefore, we should look for a common denominator for them in order to provide comprehensive therapeutic and educational solutions. As noticed by Leech Rebecca, McNaughton and Timperio (2014), we can distinguish two approaches to the analysis of multiple risk behaviours: co-existence and clustering. Both of them have advantages and limitations and therefore, both were used in this study. The theoretical background for such a search in this paper includes, for example, the Theory of Triadic Influence.

One of the results of this study that is worth noting is the percentage of people who accumulate beneficial and adverse health behaviours (taking the four studied behaviours into consideration). Only one in ten students and close to one in seven professionals accumulates all four beneficial health behaviours. It means that these individuals fully comply with the health recommendations that they should be promoting among their patients (clients). The accumulation of three beneficial behaviours in cross-sectional studies, for example among Hungarians, was reported in less than 6% of the respondents and of two behaviours in 25% of them (Paulik, Boka, Kertesz, Balogh, & Nagymajtenyi, 2010). Similarly, in the Danish population a full accumulation of health beneficial behaviours in respect of smoking, dietary patterns and physical activity was reported in 3% of the respondents (De Vries, Kremers, Smeets, & Reubsæet, 2008). As a counterbalance, we may present the percentage of the respondents who accumulate three or four health risk behaviours (low nutrition status, current smoking, low physical activity, heavy or binge alcohol consumption). At it has been revealed, we can observe several professionals accumulating all the four risk behaviours (1%) whereas three risk behaviours are accumulated by 6% of students and 11% of professionals. When we look further, it becomes clear that one in four students and one in five professionals accumulate two health risk behaviours.

Research on clustering has suggested that only a small proportion of the populations studied meet all (or almost all) of the recommended guidelines

for the behaviours assessed (De Vries et al., 2008; Fine et al., 2004; Ford, Ford, Will, Galuska, & Ballew, 2001; Pronk et al., 2004; Schuit et al., 2002). Obviously, this fact suggests that necessary directions for action need to be taken, e.g. health promotion programmes.

In the search for patterns of accumulations typical for future and present medical personnel participating in the study, a statistical procedure different from the previously mentioned approach was used, namely cluster analysis, on the basis of which four clusters were distinguished. Cluster 2 was particularly interesting since it grouped individuals with a relatively good diet and high physical activity, being moderate alcohol drinkers and current non-smokers. Unfortunately, this pattern is followed only by 27%, i.e. one in four respondents. Next, another 27% of the respondents follow the moderate pattern (moderate diet, non-smoking, not abusing alcohol but also physically inactive). It seems then that not much is needed for them to follow the assumed beneficial pattern and an intervention is required to encourage an increase in everyday physical activity (cluster 4). The other two clusters contain almost a half of the respondents and are characterised by a poor diet, varied physical activity as well current/ex-smoking (cluster 3) or heavy/binge drinking (cluster 1) status. The cluster consisting of those with heavy/binge drinking status is most typical of students whereas the one characterised by smoking is typical of professionals. It is difficult to find role models for patients or clients among the persons, amounting to 46% of the respondents, who follow such behaviour patterns.

An analysis was performed on both social and subjective determinants of the distinguished clusters. Persons allocated to **cluster 1** rate their own health as moderate, health is not ranked high in their hierarchy of values, they do not appreciate their role in their own health care, entrust it to health specialists and do not believe that their health depends on fate or chance; moreover, most frequently they are overweight or their body weight is in the lower limit of normal. The persons allocated to **cluster 2** rate their own health as good or very good, health is an important value in their lives, they have a high sense of control over their own health, and thus, they believe that health care personnel controls it to a small extent and their BMI is generally normal. The persons allocated to **cluster 3** rate their health as bad, do not appreciate the value of health in life, they are not distinguishable in terms of health locus of control and most often they are overweight. The persons allocated to **cluster 4** rate their health as moderate, appreciate health as an important value in their lives, do not feel in control of their own health, entrust such control to health care specialists and believe that health depends also on external factors such as fate, chance or God, most often they are underweight or have normal body weight.

The following can be considered as psycho-social factors associated with beneficial patterns of health behaviours: valuation of health as an important value in life, high internal health locus of control (whereas high external health locus of control plays an ambivalent role), good or very good self-rated health. Self-rated health proves to be a predictor of health behaviour patterns beneficial to health

and it is suggested that this measure should be more often used in the assessment of population health (Bopp, Braun, Gutzwiller, & Faeh, 2012; Tsai, Ford, Li, Zhao, Pearson, & Balluz, 2010; Wu, Wang, Zhao, Ma, Wu, Yan, & He, 2013). Generally, Internal Health Locus of Control is positively associated with health-enhancing behaviours, such as proper diet or physical activity, whereas Powerful Others or Chance Health Locus of Control are associated with risk behaviours, such as smoking or drinking alcohol. In this study a group particularly diverging from this pattern includes nurses, who form a professional group specifically succumbing to external control within the scope of health, both with reference to authorities and fate or chance, which does not prevent, and may even strengthen some of their choices beneficial to health, especially within the scope of alcohol consumption.

It should be also emphasised that, as other studies reveal, self-efficacy so significantly associated with the individual studied behaviours are also associated with each other, for example, self-efficacy for refraining from smoking was associated with self-efficacy for physical activity as well as self-efficacy for nutrition-related behaviours and physical activity (Boudreaux, Wood, Mehan, Scarinci, Taylor, & Brantley 2003; King, Marcus, Pinto, Emmons, & Abrams, 1996; Kremers et al., 2004). This fact also argues for searching multidimensional strategies for changing health risk behaviours.

The paper proposes also a construct of Health Behaviour Profiles (HBP), based on the division of the respondents' activities related to their own health (health enhancing behaviours and health-compromising behaviours) as a starting point. Five HBPs were distinguished on that basis: *destructive*, *passive*, *ambivalent*, *average* and *beneficial*. In this study a focus was on the issue of taking up both beneficial and adverse activities. With reference to physical activity and nutrition the activity means any action enhancing health whereas the situation is different for smoking and alcohol consumption. Here, it is “avoidance” and abstinence that are essential for health. On that basis the study revealed about 40% of persons representing the *beneficial* profile and 20% of persons with *average* profile. The remaining respondents (about 40%) represent adverse profiles, namely *destructive*, *passive* and *ambivalent*, including as many as 13% representing the first one. It is another confirmation that almost half of present and future health care specialists adopt an adverse lifestyle. This diversification, especially in terms of the frequency of representation of adverse profiles, can be also observed among students and professionals, where worse patterns are significantly more often observed among professionals.

While analyzing social and subjective correlates of the distinguished profiles, it can be concluded that they are differentiated by most of the variables subject to analysis. Representatives of the *beneficial* profile are characterised by the following: health is a significant personal value and an important prerequisite for personal happiness, they have a high sense of Internal Health Locus of Control and a low sense of Chance Health Locus of Control, they highly value their health potential and usually have a normal body weight. Representatives of the *average* profile are characterised

by the following: health is a value of moderate importance to them, they have a high sense of Internal Health Locus of Control and a low sense of Chance Health Locus of Control, they rate their health as good and they usually have a normal body weight. Representatives of the *passive* profile are similar to those representing the *average* profile in terms of health valuation but they have a low sense of Internal Health Locus of Control and a high sense of Chance Health Locus of Control and they are quite often underweight. Representatives of the ambivalent profile are characterised by the following: ambivalent valuation of health (significant as a personal value, rather unimportant as a prerequisite for happiness), low rating of their own health, a low sense of both Internal Health Locus of Control and Chance Health Locus of Control. Representatives of the destructive profile are characterised by the following: health is a value not very important to them, their self-rated health is low, they have a low sense of Internal Health Locus of Control and a high sense of Chance Health Locus of Control and quite often they are overweight. The presented characteristics may form a basis for more precise adjustment of the promotional programme to the needs of participants, depending on the represented health behaviour profile.

The application of clustering of lifestyle factors is important because it may provide indications for more effective, lifestyle-based health promotion strategies than the more traditional single behaviour approach. Obviously, in order to do so, in-depth information needs to be gathered regarding a series of health behaviours, potentially leading to longer assessment procedures. However, an advantage of the lifestyle approach lies in the fact that offering a target group the possibility of choosing which health behaviour to improve, constitutes an attractive feature for intervention designers (De Vries et al., 2008). Moreover, when motivational stages and cognitive factors are found to cluster across health behaviours, a positive change in intrapersonal determinants of one behaviour might also induce changes in the related construct for another, clustered, behaviour (King et al., 1996; Kremers et al., 2004). Thus, the principle of these “synergistic” effects forms a potentially effective ingredient of health promotion programmes (Kremers et al., 2006).

6 Conclusion

There is increasing recognition of the importance of medical staff health. Large-scale programmes targeting life style behaviour analyses among current and future medical professionals are still required, in particular in East Central Europe, e.g. in Poland. In the present study, the level of implementation and co-occurrence of health behaviours among current and future health professionals were analysed. Their subjective and social determinants were also highlighted. By way of summary, the research questions will be answered.

Q1. The level of health behaviours presented by a large number of the studied current and prospective medical personnel does not support health. As regards physical activity, the studied physicians, nurses and medical students present the average level for the Polish population, which means that less than half of them present a high level of physical activity. Nutrition habits are unhealthy for one in three students and one in four professionals. The percentages of current or ex-smokers are lower or similar to the data for the population of Poland. Binge or high alcohol consumption are characteristic of one in three students and one in five professionals.

Q2. Differences between the studied groups in the co-occurrence of both adverse and beneficial behaviours are observed. It transpires that nurses, as a group, show more frequent accumulation of unhealthy behaviours. The highest number of people accumulating all beneficial behaviours is identified among physicians and physiotherapists. A higher physical activity level is associated with more beneficial nutrition, particularly among professionals (physiotherapists, nurses, physicians). It is also connected with the no smoking status, in particular among professionals (physicians and nurses). A better nutritional behaviour is associated with a more healthy level of alcohol consumption, especially among professionals (physiotherapists, physicians, nurses). It is also related to the no smoking status, especially among professionals (physiotherapists, physicians, nurses). Four clusters of health behaviours are identified. One of them is more often presented by students, and another – by professionals. Each cluster is typical for one or two groups of respondents (medical or physiotherapy students, physicians, nurses and physiotherapists). There is a difference between the groups of students and medical staff. Five Health Behaviour Profiles are analysed (*destructive, passive, ambivalent, average, beneficial*), which vary among the groups of respondents. The *destructive* profile is the most common among nurses, and the *beneficial* profile is the most common among physiotherapy students.

Q3. All the studied groups differ with respect to all health behaviours. Physiotherapy students are the most physically active, physicians and physiotherapists have the best nutrition habits, the lowest percentages of smoking habits are characteristic of physiotherapy students, the lowest rates of binge and high alcohol consumption typifies nurses. The studied groups have been found to differ with respect to almost all subject and biological variables.

Q4. Models of determination for all the investigated health behaviours are identified. Health-related self-efficacy is the most important variable correlated with all investigated health behaviours. Other important correlates are: health locus of control, self-rated health, BMI status and membership in one of the studied groups. The subject, biological and social variables correlated with the identified health behaviour clusters are: health locus of control, self-rated health, BMI status and membership in one of the studied groups.

The subject, biological and social variables which correlate with Health Behaviour Profiles are: self-rated health, valuation of health, Internal and Chance Health Locus of Control and BMI. The studied groups differ in respect to Health Behaviour Profiles.

Q5. Health related self-efficacy plays a mediator role in the relationship between health valuation and health behaviour only with respect to smoking (medium effect). Health related self-efficacy plays a mediator role in the relationship between health locus of control and health behaviour with respect to physical activity (small effect), nutrition (small effect) and smoking (large effect).

Q6. Health locus of control plays a mediator role in the relationship between health valuation and health behaviour with respect to physical activity (small effect), nutrition (small effect) and smoking (small effect).

The importance of health behaviours in the general population has been recognized and it is expected that health professionals will support their patients in healthy lifestyle choices. The preventive activities and healthy choices should be important for physicians, nurses and physiotherapists, too. There is a need for intervention targeting preventive health care issues, such as proper nutrition, increasing physical activity and quitting smoking, which could positively affect the personal health of medical staff and, as a consequence – their patients. The educational and behavioural needs of the investigated current and prospective medical personnel depend on career stage and profession. As a result, there is a need for health promotional programs targeting carefully chosen medical staff groups, with an emphasis on their special health needs. The expectation that physicians or other medical professionals will heal themselves proves to be futile. This point of view is also connected with the more general reflection on the health care system in Poland. Poland needs changes in health and social policies directed at preventive medicine, seen as a solution to better individual and social health, than at reactive medicine.