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Article

How do universities implement the Health Promoting University concept?

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Summary

The Health Promoting University (HPU) concept encourages universities to incorporate health into the university culture, processes and policies in an effort to promote the health of the university community. Universities worldwide have adopted the approach and a framework for action has been developed to guide universities to become a HPU. However, information on how universities translate the framework into actions is scarce. This study explored the way in which 54 universities from 25 countries across the world implemented the HPU framework. An online questionnaire was used to assess the action areas and items of work addressed by the universities and to determine their adherence to the components of the HPU framework: use of the whole systems approach; multiservice collaboration; recognition by the university authorities; funding availability; membership of a HPU network and evaluation of the initiative. The results showed that these components were addressed by most universities. A Multi Correspondence and cluster analysis identified four types of universities based on the implementation of the components: 'emerging' HPUs that are not recognized by the university authorities and tend to not apply the whole systems approach or evaluation of the initiative, and 'established' HPUs that are recognized by the authorities, apply the whole systems approach and evaluate the initiative but that differ with regard to funding and membership of a HPU network. These results demonstrate that universities implement the HPU framework for action differently in order to become a Health Promoting University.

Key words: Health Promoting University, implementation, settings approach

INTRODUCTION

The Ottawa Charter for Health Promotion claims that health is built where people live, play and love (World Health Organization, 1986). One of these places is the university environment. Universities are organizations where people spend a significant part of their lives, either as students or as employees. Often, the members of these universities are or will be leaders whose ideas and values will have an impact on society (Dooris *et al.*, 2016). The university environment thus provides a valuable opportunity to promote health and well-being (Dooris and Doherty, 2010a).

Universities across the world seize this opportunity and assume their responsibility to promote health. In doing so, they follow the principles of a *Health Promoting University* (HPU). The HPU concept is based on the

setting approach to health promotion that has been successfully applied to schools, workplaces and cities (Tsouros *et al.*, 1998). The principles, objectives and expected outcomes of HPUs are laid out in the Okanagan Charter (American College Health Association, 2015). According to this charter, HPUs must incorporate health into the university culture, processes and policies, and promote an organizational culture and learning environment that enhances health, well-being and the sustainability of its community. These measures enable the members of the university community to reach their full potential (Dooris *et al.*, 2010a).

Experiences with the implementation of HPU initiatives are shared by a number of HPU networks around the world (Arroyo-Acevedo *et al.*, 2014). In these networks, the more experienced universities can share their successes and difficulties with implementing the HPU concept, serving as examples for other universities. The information thus gathered helps to identify key factors in becoming a HPU. Although this process is in its infancy (Newton *et al.*, 2016), the way HPUs are implemented is interesting for the broader field of health promotion, because it shows the translation of a conceptual framework into actions.

A framework for action

Several documents have been developed to guide universities to become a HPU. In 1998, the European Regional Office of WHO published experiences of English universities to inspire other universities in Europe to implement HPU (Tsouros *et al.*, 1998). In 2005, the Edmonton Charter reinforced the definition and principles of a HPU and proposed the objectives to be pursued by HPUs (WHO, 2006). Ten years later, the Okanagan Charter consolidated the key principles of a HPU (American College Health Association, 2015), notably: (a) use of a whole systems approach that is comprehensive and participatory; (b) collaboration between sectors within and outside the university; (c) promotion of research, innovation and evidence-informed action; (d) building on existing strengths; (e) valuing local communities, contexts and priorities; and (f) acting on an existing universal responsibility.

The Okanagan Charter also established a framework for action, grouped in two calls. The first call seeks to embed health into the campus culture through five action areas: (a) embed policies and practices with attention to health; (b) create healthy environments; (c) create a culture of well-being; (d) support personal development; and (e) re-orient campus services. The second call seeks for universities to lead health promotion action and collaboration locally and globally through three additional areas of action: (f) incorporate health and health promotion into the curricula across all disciplines; (g) support research, teaching and training for health promotion; and (h) reinforce partnership and collaboration in and off university. In addition to these key principles and areas of action, the framework also proposes 'items of work' to be addressed. These items of work are essentially health topics that are common among young people and that a HPU can focus on (Gore *et al.*, 2011).

Implementing the HPU concept

To implement the HPU framework, several key elements must be addressed. In general, the implementation of health promotion initiatives requires paying attention to characteristics of the program (e.g. its innovative nature or flexibility), of the context (e.g. political support, resources or supportive policies), and of the provider (e.g. perceived needs, self-efficacy, skills) (McKay *et al.*, 2015). In the context of HPU, Dooris and Doherty (2010a) consider the application of the whole systems approach as a key element of a successful HPU implementation. To allow this approach, multiservice collaboration is necessary to coordinate the initiative. Such a collaborative coordination reinforces the idea that health is everyone's responsibility, and that the initiative targets all members of the university community. Another key component of the implementation of a HPU is institutional support, which is indispensable for the sustainability of the initiative. This support is demonstrated by an official recognition of the initiative, and preferably also by the provision of funding (Arroyo-Acevedo *et al.*, 2014; Newton *et al.*, 2016). Other components of the implementation of a HPU are its involvement in a network and efforts to evaluate the initiative. The latter demonstrate the willingness of universities to learn and improve their initiatives (Ippolito-Sheperd, 2010).

While the key principles of HPU and the framework for action, along with the key components for their implementation, are clearly described, information on how universities make use of these guidelines to operate in a real context is scarce. To address this issue, the current study investigated the process of implementing the HPU framework in a number of universities across the world, looking at the priority action areas and items of work that are addressed by these initiatives and seeking to describe how the local and cultural context influences the way in which the HPU initiatives are implemented.

METHODS

Study design and instrument

To explore the implementation of HPUs an online survey was organized among universities belonging to HPU networks in different countries. For the survey, an adapted version was used of the questionnaire used by Dooris and Doherty (2010b) to study healthy universities in England. The questionnaire was drafted in English, and then translated into Spanish. Both versions were reviewed by two bilingual experts in HPUs to ensure that the content was the same in both languages. It included closed, multiple choice and open-ended questions and was designed in such a way that respondents could not move on to the next question until an option had been marked. For some questions, comments could optionally be added to the chosen response (close and multiple choice questions). The questionnaire covered the following aspects: (1) *General information about the university*, which included demographic data, type of funding, location, etc.; (2) *Information about the HPU initiative*, which inquired about the membership of a HPU network, the name of the initiative and the length of time that it was implemented; (3) *Priority areas of action*, which inquired about the objectives that guided the HPU initiative; (4) *Priority items of work*, which asked for the health issues that were addressed by the initiative (e.g. eating habits, mental health, etc.); (5) *Coordination and commitment*, which inquired about the service(s) that coordinated the HPU; and (6) *Evaluation*, which concerned any evaluation process of the HPU. Six of the closed questions assessed how universities implemented the HPU framework and its key components. These questions had two possible answers (yes/no) exploring whether HPU met the following features: (a) use of the whole systems approach; (b) multiservice collaboration; (c) recognition by the university authorities; (d) availability of funding for its operation (e) membership of a HPU network; and (f) evaluation of the initiative. For the question regarding the use of the whole systems approach, a positive answer was followed by two other questions: application of the initiative at the institutional level, and strategies addressed to all university community members. Only when the answers to both these follow-up questions were positive, the university was considered to use the whole systems approach. For all the six closed questions, respondents could add comments, to provide more detail about the marked option.

Sampling

Data collection took place from June to September 2016. To select the participants, a purposive sampling approach was used whereby HPU networks in different continents and countries were contacted. The coordinators of the networks were asked to distribute among their affiliates an invitation with a link to the online questionnaire. The questionnaire, made available via LimeSurvey, had to be completed by the coordinator or another person directly related to the initiative. Representatives of the universities that did not respond to the invitation sent by the network were contacted directly. At least three email reminders were sent to each potential respondent.

A total of 141 universities from 48 different countries received the invitation. Of those, 54 universities from 25 countries completed the questionnaire. Of the completed questionnaires, 32 were answered in Spanish, 21 in English, and 1 in French. The overall characteristics of the participating universities are shown in Table 1.

Data analysis

To derive information from the questionnaire, descriptive statistics (frequencies and percentages) were computed regarding the action areas and items of work addressed by the universities and about the way the universities implemented the components proposed in the HPU framework. Next, the responses on the six closed questions regarding the implementation of the HPU components were used to group universities using a Multiple Correspondence Analysis (MCA), followed by a Hierarchical Cluster Analysis (HCA).

MCA detects underlying structures in a set of nominal or categorical data by graphically representing data as points in a low-dimensional Euclidean space. As the variables related to the implementation in our study were all dichotomous (use of the whole systems approach, recognition by the university authorities, membership of a HPU network, multiservice collaboration, availability of funding for the operation and implementation, and evaluation of the initiative), MCA allowed to assess the relationship between universities and between the variable categories (yes/no) by determining the Euclidean distance between them. An indicator matrix was constructed with the universities in the rows and the categories for each variable in the columns. The distance between universities was determined by considering the categories they shared. The distance between categories was determined by considering the universities that selected each category. The relationships between universities and between variables could thus be graphically represented in a factor map, which along with the inspection of differentiating values allowed to create dimensions of the implementation characteristics.

Table 1: Characteristics of the participating universities ($n = 54$)

Variable	*n*	(%)
Location		
Europe	27	(50.5%)
Americas	24	(44.4%)
Others[a]	3	(5.5%)
Country classification		
High-income	31	(57.4%)
Upper-middle	19	(35.1%)
Lower middle	4	(7.4%)
Type of university		
Public	46	(85.1%)
Private	8	(14.8%)
Time of implementation of the initiative		
Before 2000	6	(11.1%)
Between 2000 and 2010	15	(27.7%)
After 2010	33	(61.1%)
Size of the University (no. of students)		
Small <10 000	12	(22.2%)
Medium >10 000 < 20 000	16	(29.6%)
Large >20 000	26	(48.1%)
Ranking classification (THE)[b]		
Low >1000	23	(42.5%)
Medium >500 <1000	20	(37.0%)
High <500	9	(16.6%)
No classification	2	(3.7%)
Fees €/year first year national student		
<1000	13	(24.1%)
>1000 <5000	14	(25.9%)
>5000 <10 000	9	(16.6%)
>10 000	6	(11.1%)
No information	12	(22.2%)
Gini coefficient of the country[c]		
≤0.34	13	(24.1%)
>0.34 ≤0.36	14	(25.9%)
>0.36 ≤47.7	13	(24.1%)
>47.7	10	(18.5%)
No information	4	(7.4%)

The values represent the number of universities (percentage).
[a]Including Africa and Oceania (Australia).
[b]Times Higher Education Ranking 2016.
[c]0 = complete equality; 1 = complete inequality.

Based on the MCA, a HCA was performed applying the agglomerative Ward method and using the object scores on the MCA dimensions to generate clusters of universities sharing similar profiles. Chi-square was used to test differences between clusters regarding location, country classification, type of university, and other characteristics of the universities presented in Table 1. The FactorMine R package was used for MCA, and SPSS version 24 was used for the HCA and Chi-square.

RESULTS

Action areas and items of work

Action areas are the objectives that universities pursue to become a HPU according to the framework for action. From a list of nine, respondents selected those which their university was working on or had worked on in the last 3 years.

The action areas most often addressed by the universities in our sample were: the development of skills to improve health and well-being, the support of research in health promotion, and the development of healthy policies (Figure 1A). Other priority areas, such as the development of a healthy environment, development of partnerships, and the incorporation of health in the curriculum, were less often mentioned. Table 2 shows examples of activities that universities developed to implement the priority action areas.

The items of work are the health topics that are addressed within the framework of a HPU. Respondents selected from a list those items of work their university was working on or had worked on in the last 3 years. The items most often addressed were: promotion of physical activity and healthy eating habits, prevention of alcohol abuse, and promotion of mental health (Figure 1B). Table 3 shows examples of activities that universities developed to implement the items of work.

Implementation of the key HPU components

To determine the adherence to the HPU concept, the percentage of universities that applied each of the key components of HPU was considered. Each of the key components was implemented by more than 60% of participating universities (Table 4).

a. The whole system approach was implemented by the 70% of the universities. The initiative was generally carried out at the institutional level, targeting the entire community and covering a variety of topics and strategies to improve the quality of life, study and work conditions.
b. Multiservice collaboration was implemented by the 63% of the universities. The services most actively involved were student health service, the sports department and faculties related to health. In some cases, a special HPU group was created to lead the initiative. In the universities where such a group was created, the initiative was less associated with a specific service, allowing the initiative to be more reflective of several services.
c. Recognition of the authorities was reported by 85% of the universities. Authorities that recognized the

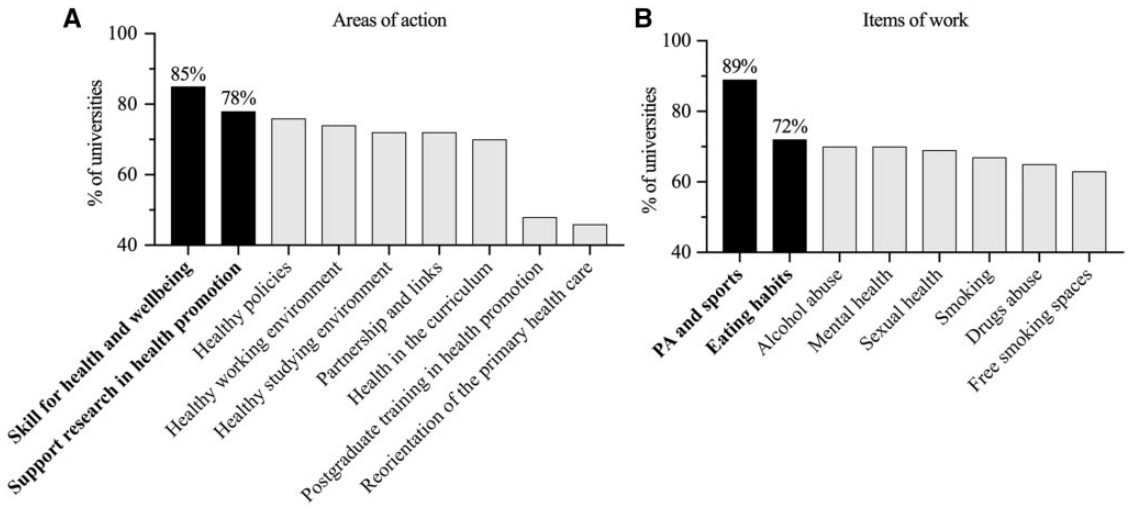

Fig. 1: Action areas addressed by the HPU. (A) Percentage of universities addressing the action areas proposed in the HPU action framework. (B) Percentage of universities addressing different items of work.

initiative were typically the Head of the Institution (Rector or President) or the Superior Council of the university. The recognition was mostly given in the form of a signed document (resolution, declaration or policy), although in some cases it was rather informal, albeit publicly known. In some universities the support from the authorities was present from the beginning, while in other instances it was only obtained after the value of the initiative could be demonstrated (e.g. satisfaction improvements, behaviours, etc.). Universities that did not have the support of the authorities mentioned that the difficulty was often due to changes in the administration.

d. Funding was reported by 78% of the universities. Funds were earmarked specifically for the initiative or through other participating services (e.g., student health service, sports department). Other funding came from private sources or through competitive funding from the local government. Funding was considered very important to hire human resources with partial or exclusive dedication to the initiative. In those initiatives where human resources were only available through voluntary work or in parallel with other academic activities, the coordination of the initiative was much more difficult.

e. Membership of a HPU network was reported by 76% of the universities. Most participating universities were members of a regional network that was part of a larger national network, which in turn belonged to a larger international network. The *IberoAmerican Network* was the most recognized one among the participating universities of Latin America and Spain, while the *Healthy Universities Network* was most often mentioned in universities in the United Kingdom and other English speaking countries. Although the latter originated as a national network in England, it currently includes universities from several countries.

f. Evaluation of the HPU initiative was implemented by the 67% of the universities. Incuding mostly the application of quality of life and/or health related behaviours surveys addressed to the university community, to measure changes. In some cases, the evaluation was performed by an external organization to obtain a certification, but in most cases it was done by the members of the university itself. Some universities mentioned the importance of a whole system focus and a participatory approach to evaluation, but also recognized the difficulty of such a process and the lack of availability of suitable tools. Universities that did not yet perform an evaluation argued that the initiative was in an early a stage of implementation, that they did not have sufficient resources, or that they did not have the tools to carry out an evaluation.

A typology of HPU universities

The results of the MCA and cluster analyses allow to differentiate universities according to their adherence to the key components of HPU. While the maximum number of possible MCA dimensions representing full variability of the data (total inertia) equalled six, the first two dimensions represented 53.55% of the variability (Dimension 1: 34.74%; Dimension 2: 18.81%).

Table 2: Examples of specific activities to develop the priority areas of action

Skills for health and well-being	• Training courses or workshops on different health topics (prevention of risk factors, healthy eating habits, etc.) • Opportunities for physical activity (extracurricular courses, active breaks, bicycle loan, etc.) • Training of peer health educators
Support research in health promotion	• Health research groups focusing on life habits • Promotion of pre and postgraduate theses on health promotion • Availability of competitive funds to develop research on health promotion
Healthy policies	• Incorporation of health promotion into the mission and vision of the university • Creation of regulations to restrict the sale of alcohol, tobacco and junk food • Creation of regulations to promotes healthy eating habits and the practice of physical activity • Incorporation of policies for tobacco free spaces • Institutional policies to promote gender equity and inclusion of students with specials needs
Healthy working environment	• Prevention of occupational hazards (safe and ergonomic workplaces, workshops for stress management, problem solving system) • Opportunities for physical activity and healthy eating • Protocols for action to prevent discrimination or harassment
Healthy study environment	• Improvement of physical environments (green spaces, cafeterias, places to study and rest) • Opportunities for physical activity (regular and optional courses accessible all students) • Access to cultural activities • Day care centres for the students' children • Protocols for action in case of discrimination or harassment
Partnership and link	• Collaborations with organizations of the health and education sectors (ministries, WHO/PAHO international agencies, regional and local health centres, other universities, schools) • Cooperation with organizations of the cultural and entertainment sector (theatres, cinemas, sports centres)
Health in the curriculum	• Mandatory courses of health promotion for the careers of the faculty of health • Optional courses on health promotion for all professional careers (mental health, substance abuse, sexual health, etc.)
Postgraduate training in health promotion	• Specialized courses, masters and PhDs programs focused on health promotion
Reorientation of primary health care	• Counselling and guidance on lifestyle habits • Attention with integral approach, promoting physical, psychological and emotional well-being

Discrimination measures were calculated for both dimensions, but revealed no differentiating values for each of the dimensions obtained. However, visual inspection revealed that the most discriminating characteristics for Dimension 1 were receiving funding and membership of a network. For Dimension 2, the most discriminating characteristics were multiservice collaboration and the recognition by the university authorities. Based on these results, Dimension 1 can be considered as representing the more 'formal' characteristics of HPU, and Dimension 2 the more 'conceptual' ones.

The factor map representing the positioning of the universities on the two dimensions is shown in Figure 2, which represents the universities as points in a two-dimensional space. The map allows to identify clusters of universities. For instance, the bottom right quadrant groups nine universities whose initiatives are in most cases coordinated by a multiservice collaboration, receive funding and are not members of a network; whereas the top right quadrant groups eight universities who do not often use the whole setting approach, are not recognized by the authorities, and hardly ever evaluate the initiative.

A HCA based on the object scores on the MCA dimensions enabled to group the universities according to how they implemented the key components of HPU. Based on the visual inspection of the dendogram, four clusters of universities were retained. The comparisons between these clusters for the key components of HPU are shown in Table 4. There were significant differences between clusters on all key components, except for the

Table 3: Examples of specific activities to develop the main items of work

Physical activity and sport	• Sports and physical activity courses for all community members; hiking trails and outdoor gadgets; agreements with external fitness centres; activities for the global day of Physical Activity
Eating habits	• Healthy food and menus at the university restaurants; removal of saltshakers from restaurants; nutritionist support; courses, workshops and food information delivery and agreements with local producers
Alcohol abuse	• Awareness campaigns, information and courses on the risks of excessive alcohol consumption; research on alcohol consumption in the university community; training of peer educators; restriction on the sale and consumption at the campus
Mental health	• Awareness campaigns, information and courses on mental health and well-being; research on mental health in the university community; psychological services providing counselling, consultation, crisis intervention and therapy; training courses addressed to professors for early identification of students at risk
Sexual health	• Awareness campaigns, information and courses on sexual health and prevention of STD; medical services providing counselling, consultation, treatment and contraception; screening for STD; condom dispenser; research; celebration of the AIDS day
Smoking	• Awareness campaigns, information and courses on the risk of smoking; medical support to quit smoking; research; celebration of the global non-smoking day/week
Drug abuse	• Awareness campaigns, information and courses on the risk of drug use; research through questionnaires applied to students; thesis and publications
Free smoking spaces	• Celebration of the global non-smoking day/week; smoking free spaces (whole institution or some buildings)

Table 4: Comparison among the four clusters of different HPUs

	Total $N = 54$	Cluster 1 'emerging' $N = 8$	Cluster 2 'established no funding' $N = 12$	Cluster 3 'established no network' $N = 9$	Cluster 4 'established' $N = 25$	p
Variables						
1. Whole systems approach	38 (70.3%)	4 (50.0%)	9 (75.0%)	6 (66.7%)	19 (76.0%)	0.541
2. Multiservice collaboration	34 (62.9%)	6 (75.0%)	5 (41.7%)	9 (100%)	14 (56.0%)	0.034
3. Recognition by university authorities	46 (85.1%)	0 (0%)	12 (100%)	9 (100%)	25 (100%)	<0.001
4. Funding	42 (77.7%)	8 (100%)	0 (0%)	9 (100%)	25 (100%)	<0.001
5. Membership to a HPU network	41 (75.9%)	4 (50%)	12 (100%)	0 (0%)	25 (100%)	<0.001
6. Evaluation	36 (66.6%)	1 (12.5%)	10 (83.3%)	6 (66.7%)	19 (76.0%)	0.005

The values represent the number of universities (percentage) in relation to the cluster.

whole systems approach. No significant differences were found for the descriptive variables showed in Table 1 among the clusters.

Based on these comparisons, the clusters can be characterized as follows:

Cluster 1 contains eight mostly European public universities that started working on HPU recently. All of them receive funding, none is recognized by the university authorities, and only half of them belong to a HPU network. The initiatives are in most cases coordinated by a multiservice collaboration, but only half of them use the whole settings approach, and evaluation is generally absent. The initiatives in this cluster could be labelled as 'emerging HPU'.

Cluster 2 contains twelve mostly public universities from different parts of the world. They have been working on HPU for a long period. Most of them use the whole systems approach and perform an evaluation, yet less than half of the programs are coordinated by a multiservice collaboration. All of them are recognized by the university authorities and are members of a HPU network, but they receive no funding. The initiatives in this cluster could be labelled as 'established HPU without funding'.

Cluster 3 contains nine universities, many of which are based in Latin America. Their initiatives are recognized by the university authorities, receive funding, and are coordinated by a multiservice collaboration. Most of them use the whole systems approach, and perform an evaluation. However, none of these universities belong to a HPU network. The initiatives in this cluster could be labelled as 'established HPU not connected to a network'.

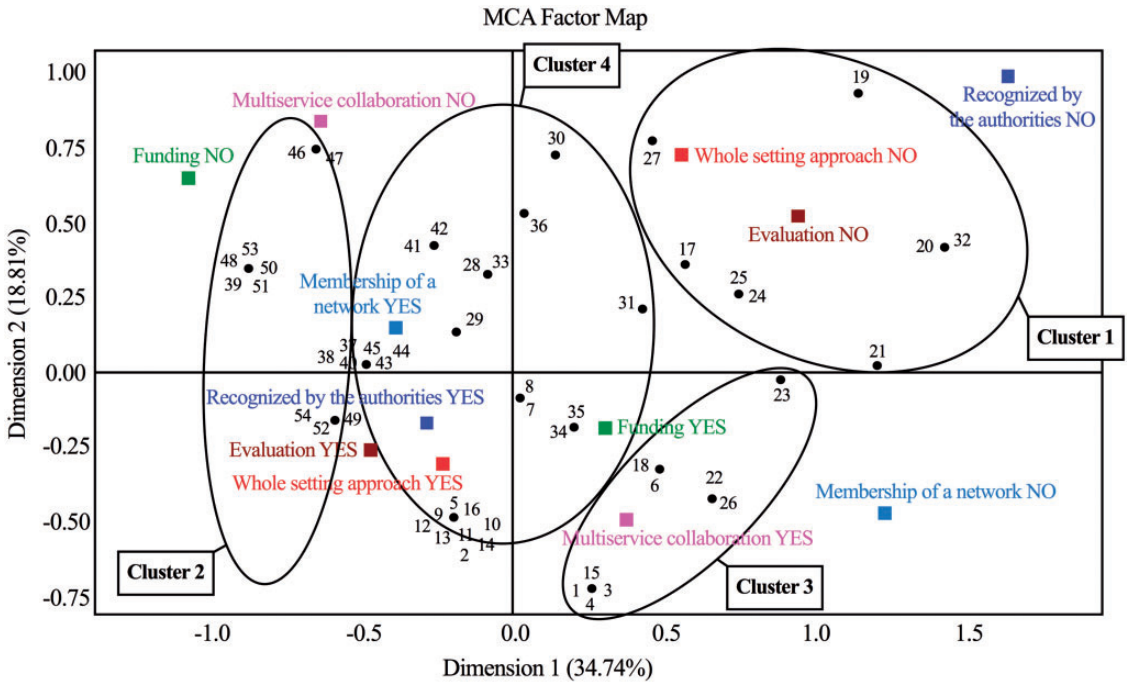

Fig. 2: Factor map showing the result of the MCA. Universities are represented by points, and the categories of the variables by squares. Universities with similar characteristics are close to each other forming the cluster.

Cluster 4 is the largest cluster with twenty-five universities. All of them are recognized by the university authorities, receive funding and belong to a HPU network. Most of them use the whole systems approach, are coordinated by a multiservice collaboration, and perform an evaluation. As such, these universities more often meet the criteria of a HPU than those in the other clusters. The initiatives in this cluster could be labelled as 'established HPU'.

DISCUSSION

This study described the main action areas and items of work addressed by HPU initiatives, and identified different implementation profiles for the key components of the HPU concept.

Action areas and items of work

The action areas more often addressed by HPU are the development of skills to improve health and well-being, and the support for research in health promotion. This result was expected, because among the actions proposed in the Okanagan Charter, these two are the most related to a university's mission. Developing health competences through health education is closely related to the university's educational role, consequently, the resources are already in place. Similarly, universities have resources for research, and assume the responsibility of conducting research to improve the health of their community and of the wider society (Orme and Dooris, 2010).

The development of healthy university policies is key for a successful HPU initiative. Policies that advocate for health are fundamental to the success of health promotion interventions (McKay *et al.*, 2015). Yet our study revealed that it is less often mentioned than health education or research. This might be due to the difficulty of its implementation (Xiangyang *et al.*, 2003). Still, the fact this action area receives some attention is positive for the future of HPUs, as healthy policies make the initiatives sustainable in the long term (Sirakamon *et al.*, 2011; Gaviria Mendez, 2015).

There are numerous studies on health-related topics in the university context. Most of them focus on lifestyle factors (alcohol use, smoking, eating habits, physical activity), and/or on the effects of those lifestyle factors on the health of students and staff (Pérez-Aranibar *et al.*, 2005; Mikolajczyk *et al.*, 2008; El Ansari *et al.*, 2011; Cooper and Barton, 2016). This was confirmed in the current study, in which the most addressed items of work were the promotion of physical activity and of

healthy eating habits. This observation is in line with previous reports on HPUs (Holt *et al.*, 2015) and on other healthy settings initiatives (Stewart-Brown, 2006; Nabe-Nielsen *et al.*, 2015).

Many studies on health at universities have focused on the prevalence of health-enhancing or health-damaging behaviours among students and staff. However, few studies have focussed on how the HPU concept, which uses the whole settings approach, influences those behaviours. This type of study would provide evidence regarding the use and effects of the whole settings approach in universities, which remain a major challenge (Ippolito-Sheperd, 2010).

Implementing the HPU

The current study also evaluated how the key components of a HPU have been implemented. Importantly, the results indicated that the majority of universities addressed these key components. The whole systems approach and multiservice collaboration are both cornerstones for a successful implementation of HPU initiatives. Although a recent systematic review indicated that the coordination of HPU initiatives is often assumed by health-related faculties (Suárez-Reyes and Van den Broucke, 2016), the current results show that many initiatives are coordinated through a collaboration between different services. As such, it seems that the understanding of HPUs is evolving and that health is increasingly considered a responsibility of the entire university community. This change in how HPUs are understood probably results from the influence of international networks and conferences, which offer a platform for exchange of experiences (Dooris and Doherty, 2010c).

However, not all universities implement every key component of HPU. The implementation of these components in complex organizations such as universities is challenging, therefore, each university does it its own way. Indeed, the results of the cluster analysis showed that universities implement the key components to a different extent. Two main profiles could be distinguished, 'emerging' (cluster 1) and 'established' (clusters 2, 3 and 4) HPU. The 'emerging' HPU initiatives (cluster 1) score low on several of the HPU implementation criteria: although they receive funding, they are generally not recognized by the university authorities, seldom use the whole systems approach, and generally do not apply an evaluation. This may be explained by the fact that these 'emerging' initiatives were only recently started. On the other hand, the 'established' HPU initiatives are all recognized by the university authorities, use more the whole systems approach, and generally involve an evaluation process. Within the 'established' initiatives, three clusters can be distinguished that differ mainly with regard to funding and membership of a network: universities that receive no funding, but are members of a network (cluster 2); universities that receive funding, but are not members of any network (cluster 3); and universities that receive funding, and are members of a network (cluster 4). Universities in cluster 3 also tend to apply the whole setting approach and to evaluate less often than universities in cluster 2 and 4.

The commitment of the authorities is essential for successful HPU initiatives (Arroyo-Acevedo *et al.*, 2014; Newton *et al.*, 2016). The initiatives in cluster 2 are recognized by the university authorities, but do not receive funding. This could suggest the authorities approve the initiative, but do not feel responsible for its operation. In contrast, universities in cluster 1 are not recognised by the university authorities, but do have funding. This suggests authorities take responsibility for the operation of the initiative, but probably, the recognition takes time to be obtained. Indeed, universities in cluster 1 are the ones that have been working for the shortest period. These universities will probably obtain the recognition of the university authorities in the future.

Noteworthy, cluster 3 is the only cluster in which none university is member of a network. These universities would thus not benefit from the experience of other universities. This isolation might explain why universities in the cluster 3 use less the whole systems approach and evaluate less than the other 'established' HPU. However, more information is needed to confirm the impact of HPU networks on guiding universities to adopt other key components.

Evaluation is essential in health promotion initiatives, since it provides feedback on actions and contributes to reinforce evidence (Stock *et al.*, 2010). 'Emerging' HPU hardly ever evaluate, which is understandable. Interestingly, although 'established' HPU generally implement the evaluation process, there are still some 'established' HPU that do not evaluate. The evaluation of HPU initiatives is complex. To do so, the university needs to be looked as a whole, understanding the interrelationships within and between the environments, with regard to different population groups, components system and health issues (Dooris, 2006). In contrast, evaluation of health promoting initiatives has been usually focused on the modification of health behaviours (Whitelaw *et al.*, 2001). The evaluation of the HPU initiatives in the current study showed the same trend, as ascertained by the open-ended questions. It is noteworthy, however, that the evaluation in certain initiatives of the current study had a participative character,

following the principles of empowered evaluation. In this approach stakeholders define what 'success' is, which increases their sense of ownership and focuses evaluation beyond the behavioural change (van Daele *et al.* 2012). Auspiciously, evaluations with participative character have already been designed by some HPU networks, such as the English (Dooris *et al.*, 2016) and the Chilean (Red Nacional de Universidades Promotoras de la Salud, 2013).

Limitations

While, to our knowledge, this study is the first to document on the process of implementing the HPU concept and compare universities with regard to this process, it is not without limitations. One limitation is that the study only involved universities that could be recruited through existing networks. Because a global coordination for HPU does not exist (Dooris and Doherty, 2010c), most participants were from Europe and Latin America, where regional networks exist. Another limitation is that the information that was collected through the questionnaire could not be confirmed by another method. However, despite these limitations, this overview of the current state of HPU implementation adds to our understanding of the HPU concept.

CONCLUSION

HPUs are spreading worldwide. Therefore, a global understanding of the initiative is essential to unify the concepts and to serve as reference. The cornerstone of this movement is the use of the whole systems approach with its associated components. Although the bases of the HPU concept are increasingly understood, the translation into actions remains a challenge. The current study showed that universities apply the HPU concept by adopting different profiles of implementation, which reflects the different phases of implementation as well as the different contexts.

To understand the role of the context, studies with an international focus, such as this one, provide a relevant contribution to the field of health promotion (Van den Broucke, 2016). The current results can guide the development of HPU initiatives, and will help institutions on their way to become a Health Promoting University.

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