Volume 4 | Issue 1 www.clinhp.org April | 2014

CLINICAL HEALTH PROMOTION

Research & Best Practice for patients, staff and community

In this issue

Research and Best Practice

News from the HPH Network

News from SEEHN

Editorial Office

WHO-CC, Clinical Health Promotion Centre
Bispebjerg & Frederiksberg Hospital,
University of Copenhagen, Denmark

The Official Journal of

The International Network of Health Promoting Hospitals and Health Services

The South-eastern European Health Network

CLINICAL HEALTH PROMOTION

Aim

The overall aim of the journal is to support the work towards better health gain by an integration of Health Promotion into the organisational structure and culture of the hospitals and health services. This is done by significant improvement of a worldwide publication of clinical health promotion based on best evidence-based practice for patient, staff and community.

Printet by Zeuner Grafisk.

ISSN 2226-5864

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Editorial

Clinical Treatment + Clinical Health Promotion = Better Treatment Results Immediately

Hanne Tønnesen

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The overall aim of the National Health Services is to improve patients' health by health care deliveries; mainly diagnosing and treatment. Tremendous efforts are made to improve the outcome results, as well as to reduce adverse events, length of stay in hospital, number of visits in outpatient clinic and length of recovery.

More and more evidence has been gathered showing immediately better treatment results when integrating health promotion in the clinical pathways. This is the case for many patient groups, including patients within psychiatry, internal medicine and surgery. Today, very effective health promotion intervention programs exist, and many national, regional and local health services have already implemented the programmes in their strategy.

Internal medicine

Through many years, heavy evidence have established that most patients suffering from chronic medical diseases, such as cardiovascular illness, lung diseases and diabetes, would benefit from comprehensive rehabilitation programs. These programmes, which include smoking cessation, nutrition improvement and alcohol intervention in addition to physical training, have all been recommended by WHO many years ago (1).

Surgery

Clinical health promotion in surgery has become the new classic example on the immediate benefits of integrating health promotion in the clinical pathway. Now, intensive smoking and alcohol cessation intervention has become the gold standard program together with physical exercise and nutrition in the perioperative period. (2-5).

Mental illness

Recently, new evidence has been synthesized on the good effect of smoking cessation on mental health. The levels of anxiety, depression and affection are reduced, while the quality of life is increased. This is the case both for the general population and for specific patient groups. An important group is the psychiatric patients, who benefits at the same degree as other patient groups. Altogether, these improvements have been identified after a few weeks of abstinence, and should therefore be integrated into mental health treatment in order to improve the outcome (6).

Overall

The positive influence on treatment results of adding clinical health promotion seems to continuously increase and broaden out - both in number of patients and in number of specialties. The time has therefore come

- for the national health services to implement clinical health promotion into all patient pathways and secure the staff competences in health promotion,
- for the staff to systematically deliver the health promotion intervention related to patients in need for clinical health promotion
- for the patients and their relatives to demand effective health promotion programs.

All together these initiatives are aimming

Clin Health Promot 2014; 4:3-4

at better treatment results immediately and improved health gain for the patients on longer term.

To obtain the immediate benefits it is necessary to implement clinical health promotion, systematically based on patients' needs in daily life. The three validated and "easy to use" tools are recommended from the World Health Organization and the International Network of Health Promoting Hospitals and Health Services (7-9) to secure a transparent process of implementation and follow-up on clinical health promotion.

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Research and Best Practice

Screening for depression, anxiety, and general psychological distress in pre-operative surgical patients: A psychometric analysis of the Patient Health Questionnaire 4 (PHQ-4)

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Abstract

Background Although brief screening tools for depression and anxiety have proven psychometric quality in the general medical field, evidence is lacking for the perioperative setting. We investigated whether the ultra-short questionnaire PHQ-4 and its subscales Patient Health Questionnaire-2 (PHQ-2) and Generalised Anxiety Disorder Scale-2 (GAD-2) are reliable, valid and accurate screening tools for self-reported depression, anxiety and general psychological distress in surgical patients of preoperative anaesthesiological assessment clinics.

Methods This study was conducted in the context of the Bridging Intervention in Anaesthesiology programme (BRIA), which includes a computer assisted self-assessment of psychological screening tests. In total, data of 2,852 consecutive patients were analysed. We determined Cronbach's alpha, construct validity, factorial validity, sensitivity, specificity, negative and positive predictive value, Youden index, and ROC-AUC analyses. As criterion measures, we used the scores of the Brief Symptom Inventory (BSI) scales for depression, anxiety, phobic anxiety, interpersonal sensitivity, and the total mean score Global Severity Index (GSI).

Results Cronbach's alphas were 0.66, 0.78 and 0.83 for PHQ-2, GAD-2 and PHQ-4, respectively. Principal component analysis did not confirm the item allocation to PHQ-2 and GAD-2. All three scales showed good construct validity, as well as adequate accuracy with areas under the curve (AUC) between 0.80 and 0.88. PHQ-2 (≥ 3), GAD-2 (≥ 3), and PHQ-4 (≥ 6) had sensitivities between 46.4% and 61.2% and specificities between 89.4% and 94.5% with their established cut-off points and the respective BSI scales as criterion standards. With a lowered cut-off point of ≥ 4, sensitivity and specificity of the PHQ-4 total scale were 80.5% and 80.2%, respectively, for detecting clinically significant psychological distress according to the GSI.

Conclusion At a lowered cut-off point, the PHQ-4 total scale has sufficient psychometric quality to detect self-reported clinically significant psychological distress including depression and/or anxiety in surgical patients. PHQ-2 and GAD-2 are not recommended as exclusive measures of depression and anxiety in these patients.

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Clin Health Promot 2014; 4:5-14

Introduction

There is ample evidence that screening for depression and anxiety is the first step of successful therapy of these disorders in patients with medical diseases (1-4). Preoperative anaesthesiological assessment clinics have proven to be an ideal setting for implementing psychosocial screening as a component of a psychotherapeutic stepped care approach for surgical patients with comorbid mental disorders (5; 6). These clinics are not restricted to specific surgical fields, thus a wide range of hospital patients can be addressed. However, preoperative assessment clinics are busy settings with limited resources of time and personnel, so it is necessary to search for brief screening tools which are reliable, valid, accurate and time-saving. Although data exist that demonstrate psychometric quality of brief depression and anxiety screening instruments in the general medical field (3;7), evidence is lacking for the perioperative setting.

From the clinical perspective, an ideal stepped-care approach for surgical patients with diverse mental disorders comprises screening, detailed diagnostics, therapy and follow-up (5;8;9). In such an approach, screening should accurately identify self-reported psychological distress of any mental disorder. Therefore it is especially important to, in the first step, detect clinically significant mental distress that is associated with heterogeneous psychopathological symptoms. This is conventionally accomplished by comprehensive self-report question-

Research and Best Practice

naires of psychiatric symptoms like the Brief Symptom Inventory (BSI) (10;11). As a consequence, short depression and anxiety screening tools should be highly sensitive to detect clinically significant depression, anxiety and general psychological distress that are measured by comprehensive self-report questionnaires. Particularly, the initial screening should avoid false-negative results because in the second step, only patients scoring positively can be further diagnostically examined with a clinical interview. On the other hand, specificity should not be too low in order to avoid an inadequately high number of diagnostic interviews with patients scoring false-positive (12).

We investigated whether the ultra-short Patient Health Questionnaire-4 (PHQ-4) and its subscales Patient Health Questionnaire-2 (PHQ-2) and Generalised Anxiety Disorder Scale-2 (GAD-2) are reliable and valid screening tools for self-reported depression, anxiety and general psychological distress of surgical patients in the preoperative anaesthesiological assessment clinic. As criterion standards, we used diverse scales of the BSI, a well-established and validated self-report questionnaire for a wide range of symptoms of psychological distress and mental disorders (10;11;13).

Material and Methods

Setting, study design and patient sample

This prospective observational study is a part of the feasibility study on BRIA which was approved by the Ethics Committee of Charité University Medicine Berlin [EA1/23/2004, Amendment April 2009] and was conducted according to the principles expressed in the Declaration of Helsinki. The full details of the setting, assessment instruments and recent sub-studies of the BRIA project are available elsewhere (5;8;9). We collected preoperative psychosocial questionnaire data with a computer-assisted self-assessment, including screening for depression, anxiety and general psychological distress. This assessment took place before the anaesthesiological examination in the preoperative assessment clinics of the Charité – University Medicine Berlin. Six months after the preoperative assessment, we obtained medical data from the electronic patient management system of the hospital.

The computer-assisted preoperative self-assessment took place from Monday to Friday between 9.00 am and 5.00 pm in order to cover the complete opening hours of the assessment clinics. Inclusion criteria were: patient in a preoperative anaesthesiological assessment clinic, sufficient knowledge of German language, age ≥18 years, written informed consent. Exclusion criteria were: urgent or emergency surgery; inability to attend the preoperative assessment clinic (bedside visit); members of the hospital staff; relatives of the study team; study participation in another clinical trial; homelessness; admitted in police custody; unwilling to use or incapable of using a computer. After having been properly instructed, patients supplied written informed consent to participate in the study.

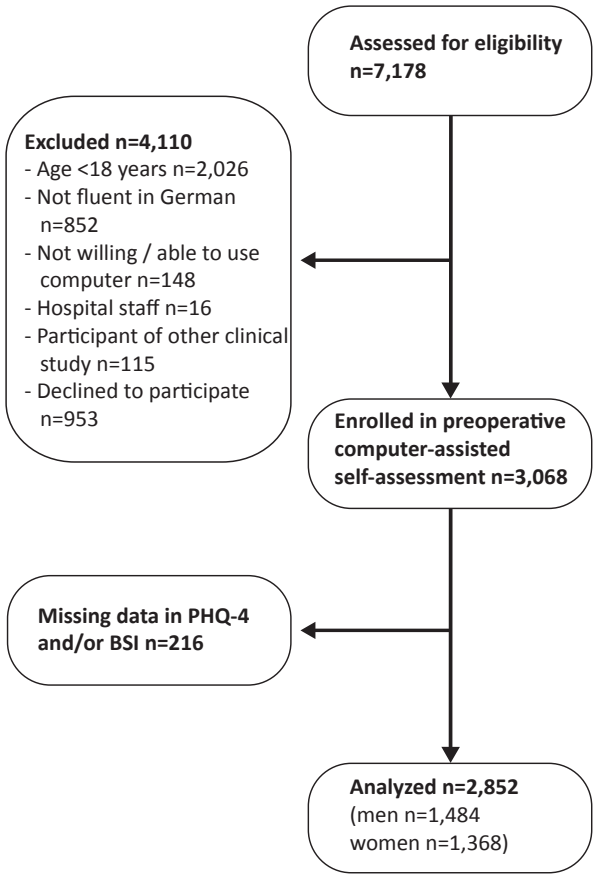
From January 2010 to June 2010, we assessed 7,178 patients for eligibility. Of these, 3,157 were not eligible according to the inclusion/exclusion criteria, 953 refused to participate, and datasets of 216 patients were not applicable for data analyses because of missing data in the PHQ-4 and / or the BSI. As a result, data of 2,852 patients were analysed in this study. Figure 1 shows the details of the inclusion process.

Measures

PHQ-4

The PHQ-4 is an ultra-short screening tool for depression and anxiety that combines the first two items of

Figure 1 Flowchart of phases of the clinical trial



Research and Best Practice

each of the scales Patient Health Questionnaire-9 (PHQ-9) and Generalised Anxiety Disorder-7 (GAD-7) (3). Thereby this 4-item self-report questionnaire consists of two 2-item subscales, the depression scale PHQ-2 and the anxiety scale GAD-2 (14). The items of the PHQ-4 measure core symptoms of depressive disorders (loss of interest, depressed mood) and generalised anxiety disorder (feeling nervous and anxious, difficulty to stop or control worrying). The questionnaire starts with the general question "Over the last two weeks, how often have you been bothered by the following problems?" and continues with asking for the four symptoms which are rated on a 4-point scale from 0 ('not at all') to 3 ('nearly every day'). The total sum score ranges from 0 to 12 with a range of 0 to 6 for each of the two subscales. An additional single item that is not included in any of the scale sum scores asks for the extent of the respondent's subjective psychosocial symptom-related impairment. A PHQ-2 score ≥ 3 indicates clinically significant depression, and a GAD-2 score ≥ 3 indicates clinically significant anxiety (3). Because it corresponds to a percentile rank of 95.7 of the normative data of a large German population sample, a PHQ-4 total score cut-off point ≥ 6 has been recommended as an indicator of the presence of a depressive *or* an anxiety disorder (4).

Kroenke et al. investigated the psychometric properties of the PHQ-4 in a sample of 2,149 primary care patients (14). They reported good reliability with Cronbach's alphas of 0.85, 0.81 and 0.82 for the total scale, the PHQ-2 and the GAD-2, respectively. Factor analysis confirmed two suggested factors with the two depression items loading highest on factor 1 and the two anxiety items loading on factor 2. Construct validity has been shown by adequate associations with diverse domains of health-related quality of life, as well as self-reported disability days and physician visits. Reliability, factorial and construct validity were confirmed in a large general population sample (4). Criterion validity of the PHQ-2 and the GAD-2 were tested in separate studies which used structured clinical interview diagnoses according to DSM-IV as criterion standards.

The PHQ-2 cut-off point of ≥ 3 had a sensitivity of 0.83 and a specificity of 0.90 for 'major depressive disorder', as well as a sensitivity of 0.62, and a specificity of 0.95 for 'any depressive disorder' in a sample of 580 US-American clinical patients (15). In a German sample of 520 medical outpatients, criterion validity of the cut-off point ≥ 3 was confirmed with a sensitivity of 0.87 and a specificity of 0.78 for 'major depressive disorder', as well as a sensitivity of 0.79 and a specificity of 0.86 for 'any depressive disorder' (16). In a clinical sample of 965 US-American patients, the GAD-2 cut-off point ≥ 3 had sensitivities of 0.86, 0.76, 0.70, 0.59 and 0.65, as well as specificities of 0.83, 0.81, 0.81, 0.81 and 0.88 for the criterion standards generalised anxiety disorder, panic disorder, social anxiety disorder, posttraumatic stress disorder and any anxiety disorder (17).

BSI

The Brief Symptom Inventory (BSI) is an internationally widely used and validated 53-item self-report scale of symptoms of psychological distress. This short form of the Symptom Checklist 90-R (SCL-90-R) has proven sound psychometric properties in community samples as well as in samples of patients with medical conditions and mental disorders (10;11;13;18). The 53 items measure severity of diverse symptoms of mental disorders during the past 7 days and are rated on a 5-point scale from 0 (not at all) to 4 (extremely). The scale consists of 9 subscales of symptom dimensions with mean scale scores ranging from 0 to 4. The total scale score Global severity index (GSI) is the mean of all 53 items. It reflects both the number of symptoms and intensity of perceived distress. Whereas previous studies challenged the symptom dimensions and suggested a unidimensional structure of the BSI, recent research has shown superiority of a bifactorial model with one factor reflecting general psychological distress and a second factor consisting of the domain-specific symptom dimensions (19). We used the scale scores depression, anxiety, phobic anxiety, interpersonal sensitivity, as well as the GSI (Global Severity Index). The cut-off points for clinically significant symptoms are, according to the test manual, for all scales at the T-score of the normative population sample of T ≥ 0.63 (10;11). In the present sample, the reliability coefficients of the scales ranged from sufficient to excellent with Cronbach's alphas of 0.85, 0.79, 0.74, 0.78 and 0.96 for depression, anxiety, phobic anxiety, interpersonal sensitivity, and the total scale.

Statistical Analyses

Data were entered into a computerised database and statistical analyses were performed with IBM SPSS Statistics, Version 21. Data of those cases who had any missing item in the PHQ-4, or according to the test manual of the BSI, more than 1 missing item in any of the four investigated subscales, or more than 13 missing items in the total scale of the BSI were excluded from analyses (11). Descriptive results were expressed as follows: frequencies and percent; median (Md) and range of the 25th-75th percentiles (interquartile range IQR); mean (M) and standard deviation (SD); mode; skewness, kurtosis and the respective standard errors (SE); minimum, maximum. Reliability of the scales was studied by Cronbach's alpha, Pearson correlations and principal component analysis

Research and Best Practice

(PCA). Validity was studied using correlations, as well as sensitivity, specificity, negative predictive value (NPV), positive predictive value (PPV), positive likelihood ratio (LR) and ROC-AUC analyses. Comparison of different cut-off points was based on the Youden index. In order to estimate which corresponding sizes of sensitivity and specificity can be considered as an optimal trade-off we followed the suggestion of Löewe et al. (2004) for a two-stage screening (screening followed by further examination, e.g. a structured clinical interview) (12): The cut-off points that had a maximum sensitivity lying above specificity which, in turn, should be at least 75% were considered the best. All 95% confidence intervals were calculated with the confidence interval calculator (20) or SPSS. As criterion standard measures, we used clinically significant depression, anxiety, phobic anxiety, interpersonal sensitivity and general psychological distress as measured with respective BSI scales. A two-tailed p-value < 0.05 was considered statistically significant.

Results

Sample characteristics

Demographic, medical and psychological characteristics of the 2,852 study participants are summarised in Table 1. The patients had a median age of 47 years, and the ratio of women and men was nearly equally distributed. Concerning preoperative physical health, the majority of the patients was evaluated as healthy or having mild systemic disease and no functional limitations. There were moderately higher percentages of patients living with a partner, having no university entrance qualification and being treated in the abdominal and thoracic surgical field. The frequency of clinically significant psychological distress ranged from 9.2% for interpersonal sensitivity to 14.6% for general psychological distress.

Table 1 Characteristics of the sample; N = 2852[+] surgical patients

	Median [IQR]	Number (%)
Demographic and clinical characteristics		
Age in years [25th – 75th percentiles]	47	[34-60]
Women	1484	(52.0)
Partnership status: living with a partner	1772	(62.6)
Level of education: university entrance qualification	1217	(42.9)
Preoperative physical health (ASA Classification)[a)]		
ASA I, II	2456	(87.0)
ASA III, IV	368	(13.0)
Surgical field		
Abdomino thoracic surgery	1126	(39.9)
Peripheral surgery	817	(28.9)
Neuro-, head and neck surgery	881	(31.2)
Clinically significant depression, anxiety and general psychological distress according to BSI scales[b)]		
Clinically significant depression	381	(13.4)
Clinically significant anxiety	316	(11.1)
Clinically significant phobic anxiety	276	(9.7)
Clinically significant interpersonal sensitivity	261	(9.2)
Clinically significant general psychological distress (GSI)	415	(14.6)

[+]Number ranges for the specific variables from 2824 to 2852 because of missing data; [a)]ASA classification (American Society of Anesthesiologists). ASA I, II: Healthy patients (ASA I), and patients with mild systemic disease, no functional limitations (ASA II); ASA III, IV: Patients with severe systemic disease with definite functional limitation (ASA III), and patients with severe systemic disease that is a constant threat to life (ASA IV); [b)]Clinically significant depression, anxiety, phobic anxiety, interpersonal sensitivity and general psychological distress according to BSI; Cut-off for all scales: T-score ≥ 0.63 (10, 11).

Item and scale characteristics

Detailed item and scale characteristics of PHQ-2, GAD-2 and PHQ-4 are shown in Tables 2 and 3. Concerning item intercorrelations, it is noteworthy that the PHQ-2 item 2 has stronger correlations with the GAD-2 items 3 (0.64) and 4 (0.67) than with the PHQ-2 item 1 (0.50) (Table 2). Whereas reliability in terms of Cronbach's alpha is sufficient for the GAD-2 (0.78) and good for the PHQ-4 (0.83) it is rather low for the PHQ-2 (0.66). Using the originally established cut-off points, the scales indicate that the rates of clinically significant depression, anxiety, as well as depression or anxiety are 17.4%, 13.3% and 12.2%, respectively.

Factorial validity

Principal component analysis of the PHQ-4 items indicates that there is only one factor with an eigenvalue above 1. It explains 67% of the total variance. The items 1, 2, 3 and 4 have loadings on this factor of 0.693, 0.873, 0.833 and 0.854. Including a second factor in the PCA revealed that the two factors explained 83% of the total variance. After varimax rotation, the first factor explained 55% and the second factor 28% of the total variance. However, rotated component matrix does not confirm the original item allocation to PHQ-2 and GAD-2. Whereas item 1 loads higher on the factor 2 (0.962), the items 2, 3 and 4 load higher on the factor 1 (0.809, 0.861 and 0.851).

Construct validity

Associations with parameters that are different from depression, anxiety and general psychological distress demonstrate a clear pattern (Table 4). All 3 PHQ-4 scales correlate only weakly with age, gender, partnership status, education and physical health, indicating good dis-

Research and Best Practice

Table 2 Item characteristics of the PHQ-4; N = 2,852 surgical patients

	Item 1	Item 2	Item 3	Item 4
Item 1: Little interest or pleasure in doing things				
Item 2: Feeling down, depressed, or hopeless	0.50*			
Item 3: Feeling nervous, anxious or on edge	0.41*	0.64*		
Item 4: Not being able to stop or control worrying	0.44*	0.67*	0.63*	
Corrected item-total correlation [a)]	0.51	0.74	0.67	0.71
Mean (SD)	0.82 (0.84)	0.59 (0.78)	0.75 (0.80)	0.47 (0.76)
[95% CI]	[0.79; 0.85]	[0.56; 0.62]	[0.72; 0.78]	[0.44; 0.50]
Median [25th – 75th percentiles]	1 [0-1]	0 [0-1]	1 [0-1]	0 [0-1]
Mode	1	0	1	0
Skewness (SE)	0.99 (0.05)	1.36 (0.05)	1.08 (0.05)	1.77 (0.05)
Kurtosis (SE)	0.61 (0.09)	1.47 (0.09)	0.97 (0.09)	2.76 (0.09)
Minimum - Maximum	0-3	0-3	0-3	0-3

* p < 0.001, [a)] Correlation between the respective item and the sum score of the remaining three items of the PHQ-4.

Table 3 Scale characteristics of PHQ-2, GAD-2, and PHQ-4 N = 2,852 surgical patients

	PHQ-2	GAD-2	PHQ-4
GAD-2	0.69*		
PHQ-4	0.92*	0.92*	
Mean (SD) [95% CI]	1.41 (1.40) [1.36; 1.46]	1.22 (1.41) [1.17; 1.27]	2.63 (2.58) [2.54; 2.72]
Median [25th – 75th percentiles]	1 [0-2]	1 [0-2]	2 [1-4]
Mode	0	0	0
Skewness (SE)	1.10 (0.05)	1.53 (0.05)	1.39 (0.05)
Kurtosis (SE)	0.98 (0.09)	2.33 (0.09)	1.92 (0.09)
Minimum - Maximum	0 - 6	0 - 6	0 - 12
Cronbach's alpha	0.66	0.78	0.83
Patients ≥ cut-off point[a)] n (%)	496 (17.4)	380 (13.3)	348 (12.2)

* p < 0.001, [a)] Cut-off point: PHQ-2 ≥ 3, GAD-2 ≥ 3 (3); PHQ-4 ≥ 6 (4).

Table 4 Construct validity: Pearson correlations of sum scores of PHQ-2, GAD-2, and PHQ-4 with demo-graphic and clinical parameters N = 2,852 surgical patients

	PHQ-2	GAD-2	PHQ-4
Discriminant validity			
Age in years	-0.02	-0.07***	-0.05**
Gender[a)]	0.09***	0.16***	0.13***
Partnership status: living with a partner[b)]	-0.10***	-0.09***	-0.10***
Level of education: university entrance qualification[c)]	-0.06**	-0.03	-0.04*
Physical health[d)+]	0.05**	0.00	0.03
Convergent validity			
BSI depression[e)]	0.61***	0.65***	0.68***
BSI anxiety[e)]	0.50***	0.66***	0.63***
BSI phobic anxiety[e)]	0.38***	0.46***	0.46***
BSI interpersonal sensitivity[e)]	0.48***	0.55***	0.56***
BSI GSI, general psychological distress[e)]	0.60***	0.67***	0.69***
PHQ-4, single item subjective psychosocial impairment	0.64***	0.64***	0.70***

*p < 0.05; **p < 0.01; ***p < 0.001, [a)]Men = 0, women = 1, [b)]Living without partner = 0; living with partner = 1, [c)]No university entrance qualification = 0; university entrance qualification = 1, [d)]Physical health according to ASA classification (American Society of Anesthesiologists): 'ASA I, II' = 0; 'ASA III, IV' = 1, [e)]Mean scores of the respective BSI scales [+]n = 2,824 because of missing data.

criminant validity. Convergent validity is demonstrated by moderate to strong correlations with the BSI scales depression, anxiety, phobic anxiety, interpersonal sensitivity and GSI, as well as the PHQ single item of subjective psychosocial impairment (Table 4).

Criterion validity

Table 5 summarises sensitivity, specificity, positive likelihood ratio, positive predictive value and negative predictive value of the PHQ-2, GAD-2 and PHQ-4 with the established cut-off points and the five BSI scales as criterion standards. Across all criterion standards sensitivities of the PHQ scales are low with a range between 46.4% for the GAD-2 with the criterion BSI phobic anxiety, and 61.2% for the PHQ-2 with the criterion BSI depression. On the other hand, specificities of the PHQ scales are high with a range between 89.4% for the PHQ-2 with the criterion BSI depression, and 94.5% for the PHQ-4 with BSI-GSI as criterion. Correspondingly,

Research and Best Practice

Table 5 Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and positive likelihood ratio (LR) of PHQ-2, GAD-2, and PHQ-4 with the established cut-off points and the respective BSI scales as criterion standards N = 2,852 surgical patients

	Sensitivity (95% CI)	Specificity (95% CI)	Positive LR (95% CI)	PPV (95% CI)	NPV (95% CI)
PHQ-2[a] Criterion standard: BSI depression [b]	0.612 (0.562-0.659)	0.894 (0.881-0.905)	5.75 (5.00-6.61)	0.470 (0.426-0.514)	0.937 (0.927-0.946)
GAD-2[a] Criterion standard: BSI anxiety [b]	0.563 (0.508-0.617)	0.920 (0.909-0.930)	7.07 (6.00-8.33)	0.468 (0.419-0.519)	0.944 (0.934-0.953)
GAD-2[a] Criterion standard: BSI phobic anxiety [b]	0.464 (0.406-0.523)	0.902 (0.890-0.913)	4.74 (3.99-5.64)	0.337 (0.291-0.386)	0.940 (0.930-0.949)
GAD-2[a] Criterion standard: BSI interpersonal sensitivity [b]	0.556 (0.495-0.615)	0.909 (0.898-0.920)	6.13 (5.20-7.21)	0.382 (0.334-0.432)	0.953 (0.944-0.961)
GAD-2[a] Criterion standard: BSI phobic anxiety [b]	0.464 (0.406-0.523)	0.902 (0.890-0.913)	4.74 (3.99-5.64)	0.337 (0.291-0.386)	0.940 (0.930-0.949)
PHQ-4[a] Criterion standard: BSI-GSI [b]	0.516 (0.468-0.563)	0.945 (0.935-0.953)	9.38 (7.76-11.33)	0.615 (0.563-0.665)	0.920 (0.908-0.930)

[a] Cut-off points: PHQ-2 ≥ 3, GAD-2 ≥ 3 (3), PHQ-4 ≥ 6 (4), [b] Clinically significant depression, anxiety, phobic anxiety, interpersonal sensitivity and general psychological distress according to BSI; Cut-off for all scales: T-score ≥ 0.63 (10;11).

positive predictive values are low and negative predictive values are high.

Sensitivities and specificities resulting from different cut-off points are visualised with ROC curves in Figure 2. PHQ-2, GAD-2 and PHQ-4 are related to clinically significant depression, anxiety and general psychological distress as measured with the respective BSI scales. The AUC as a measure of classification performance was greatest for the PHQ-4 with BSI-GSI as criterion standard (0.88). With values between 0.80 and 0.87, the AUCs of PHQ-2 and GAD-2 can also be considered as good.

Table 6 summarises sensitivity, specificity and Youden index of PHQ-2, GAD-2 and PHQ-4 at various tentatively selected cut-off points. For all three PHQ scales the highest Youden index can be observed at cut-off points that are lower than the established cut-off points. The present data indicate cut-off points of ≥ 2 for PHQ-2 and GAD-2, as well as ≥ 4 for the PHQ-4. These points yield sensitivities from 76.1% to 90.3% and specificities from 67.1% to 75.0% for PHQ-2 and GAD-2, respectively. With a cut-off point of ≥ 4, sensitivity and specificity of the PHQ-4 total scale are 80.5% and 80.2%, respectively, for detecting clinically significant psychological distress according to the GSI. Regarding the suggestion of Löwe et al. (2004) for an adequate trade-off between sensitivity and specificity (12), only the GAD-2 with criterion BSI anxiety and the PHQ-4 with the criterion BSI-GSI show specificities of at least 75% and sensitivities that are above the respective specificity. The corresponding two lines of Table 6 are highlighted in bold.

Discussion

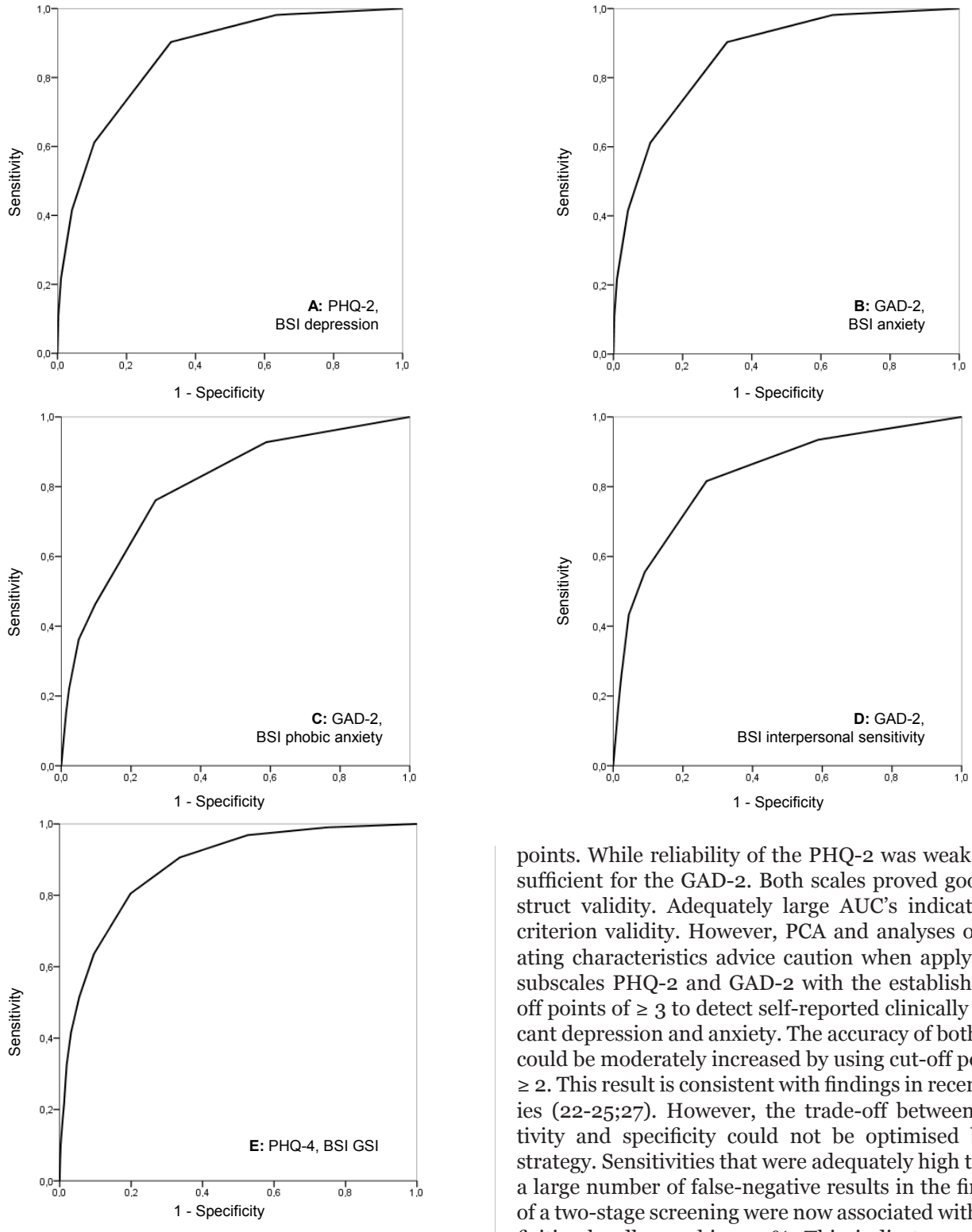
To our knowledge, this is the first study that investigated psychometric quality of an ultra-short screening tool for self-reported depression and anxiety in surgical patients. The most important result is that the PHQ-4 proved to be a reliable and valid measure that accurately detected self-reported clinically significant general psychological distress, including depression and/or anxiety, in a sample of 2,852 preoperative surgical patients. Reliability and construct validity of the PHQ-4 total scale are demonstrated by an alpha of 0.83, weak correlations with parameters not measuring psychological distress, as well as strong correlations with the BSI-GSI, the BSI depression and anxiety scales, and the PHQ-4 psychosocial impairment item. Criterion validity is indicated by a large AUC of 0.88 with the BSI-GSI as criterion standard. Analysis of operating characteristics of the PHQ-4 total scale suggest that not the established cut-of point of ≥ 6, but a lowered cut-off point of ≥ 4 yield the best trade-off between sensitivity (80.5%) and specificity (80.2%).

Comparison with other studies

Previous studies demonstrated good psychometric properties of the PHQ-4, the PHQ-2 and the GAD-2 (4; 14-17). Recent studies confirmed these results with more evidence for the PHQ-2 (21-26) than for the GAD-2 (27; 28). Studies using the PHQ-4 as a stand-alone questionnaire did not re-evaluate its psychometric properties but used its subscales in the context of clinical objectives or to evaluate other instruments (8;29-31). Our results concerning PHQ-2 and GAD-2 as explicit subscales of the PHQ-4 are rather complicated and in some points inconsistent with previous research. A comprehensive discussion of the detailed item and scale characteristics is beyond the scope of this article. We decided to include these details in the tables 2 and 3 in order to stimulate further comparisons of our data with independent data sets based on clinical and population samples. In the following discussion we focus on the most important

Research and Best Practice

Figure 2 Receiver operating characteristic curves for the PHQ-4 scales with clinically significant depression, anxiety and general psychological distress as measured with the respective BSI scales as criterion standards. A. AUC (S.E.; 95% CI) is 0.863 (0.009; 0.845 - .882) for the PHQ-2 with BSI depression as criterion standard. B. AUC is 0.873 (0.01; 0.854 - .892) for the GAD-2 with BSI anxiety as criterion standard. C. AUC is 0.801 (0.014; 0.773 - 0.829) for the GAD-2 with BSI phobic anxiety as criterion standard. D. AUC is 0.833 (0.014; 0.806 - 0.861) for the GAD-2 with BSI interpersonal sensitivity as criterion standard. E. AUC is 0.88 (0.009; 0.863 - 0.897) for the PHQ-4 with BSI-GSI as criterion standard.



points. While reliability of the PHQ-2 was weak, it was sufficient for the GAD-2. Both scales proved good construct validity. Adequately large AUC's indicate good criterion validity. However, PCA and analyses of operating characteristics advice caution when applying the subscales PHQ-2 and GAD-2 with the established cut-off points of ≥ 3 to detect self-reported clinically significant depression and anxiety. The accuracy of both scales could be moderately increased by using cut-off points of ≥ 2. This result is consistent with findings in recent studies (22-25;27). However, the trade-off between sensitivity and specificity could not be optimised by this strategy. Sensitivities that were adequately high to avoid a large number of false-negative results in the first step of a two-stage screening were now associated with specificities hardly reaching 75%. This indicates more pa-

Table 6 Operating characteristics of PHQ-2, GAD-2, and PHQ-4 with the respective BSI scale as criterion standard N = 2,852 surgical patients

PHQ-2 with BSI depression as criterion standard

Cut-off score	Sensitivity	Specifity	Youden index
≥ 0	1.000	0.000	0
≥ 1	0.982	0.365	0.35
≥ 2	0.903	0.671	0.57
≥ 3	0.612	0.894	0.51
≥ 4	0.415	0.958	0.37
≥ 5	0.218	0.990	0.21
= 6	0.108	0,998	0.11

GAD-2 with BSI anxiety as criterion standard

Cut-off score	Sensitivity	Specifity	Youden index
≥ 0	1.00	0.0	0.0
≥ 1	0.981	0.424	0.41
≥ 2	**0.864**	**0.750**	**0.61**[+]
≥ 3	0.563	0.920	0.48
≥ 4	0.430	0.963	0.39
≥ 5	0.256	0.985	0.24
= 6	0.174	0.990	0.16

GAD-2 with BSI phobic anxiety as criterion standard

Cut-off score	Sensitivity	Specifity	Youden index
≥ 0	1.000	0.000	0
≥ 1	0.928	0.412	0.34
≥ 2	0.761	0.729	0.49
≥ 3	0.464	0.902	0.37
≥ 4	0.362	0.950	0.31
≥ 5	0.221	0.977	0.20
= 6	0.156	0.986	0.14

GAD-2 with BSI interpersonal sensitivity as criterion standard

Cut-off score	Sensitivity	Specifity	Youden index
≥ 0	1.000	0.000	0
≥ 1	0.935	0.411	0.35
≥ 2	0.816	0.732	0.55
≥ 3	0.556	0.909	0.47
≥ 4	0.433	0.955	0.39
≥ 5	0.241	0.978	0.22
= 6	0.165	0.986	0.15

PHQ-4 total score with BSI-GSI as criterion standard

Cut-off score	Sensitivity	Specifity	Youden index
≥ 0	1.00	0.000	0.00
≥ 1	0.990	0.252	0.24
≥ 2	0.969	0.474	0.57
≥ 3	0.906	0.664	0.57
≥ 4	**0.805**	**0.802**	**0.61**[+]
≥ 5	0.636	0.904	0.54
≥ 6	0.516	0.945	0.46
≥ 7	0.417	0.968	0.39
≥ 8	0.325	0.980	0.31
≥ 9	0.217	0.988	0.21
≥ 10	0.159	0.993	0.15
≥ 11	0.101	0.997	0.10
= 12	0.067	0.998	0.07

[+]Highlighted in bold: Specificities of at least 75% and sensitivities above the respective specificity according to a suggestion of Löwe et al. (2004) for an adequate trade-off between sensitivity and specificity (12)

tients scoring false positive who will have to be examined clinically in the diagnostic stage. Finally, it has to be mentioned that, inconsistent with previous studies (14; 4), the original allocation of the PHQ-4 items to PHQ-2 and GAD-2 could not be confirmed by PCA. Therefore, the subscales, at least in the present sample, do not seem to be suited to classify patients into groups of only depression, only anxiety or both depression and anxiety.

Methodological limitations

The major limitation of our study is that we could not determine diagnostic accuracy of the PHQ-4 with diagnoses of mental disorders as criterion standards. This lies in the nature of the two-stage screening because only patients scoring positive in the first step are examined in the second step of clinical diagnostics. A second limitation is that our results are based on a first in-sample evaluation of the PHQ-4 as a stand-alone questionnaire.

They have not yet been tested out-of-sample using an independent data set. Interestingly, to our knowledge, there are no other psychometric analyses of the PHQ-4 as a stand-alone instrument. Previous studies on its reliability and validity assessed the items of the PHQ-4 simultaneously in the context of at least one of its parental scales PHQ-9, PHQ-8 and/or GAD-7 (4;14-17). As a consequence, the PHQ-4 as a stand-alone instrument should be re-evaluated in further psychometric studies before it is widely used in clinical research and practice.

Clinical implications and conclusion

Evidence-based recommendations point out that screening for psychological distress in patients with medical diseases is only reasonable when it is integrated in therapeutic care that comprises adequate psychological assessment, diagnostics and therapy (1;3;4). For the perioperative setting, the BRIA program has been suggested as a feasible option of a psychotherapeutic stepped care approach that combines screening, brief intervention, motivational interviewing, basic elements of cognitive behavioral therapy and follow-up booster sessions (5;8;9). As a research instrument, the computer assisted self-assessment of BRIA was rather long and comprehensive. The question arises as to which extent the results of the present study may contribute to develop an efficient and short screening for mental distress in the clinical routine of psychotherapeutic stepped care of surgical patients.

Our data support the inclusion of the PHQ-4 in a shorter computer assisted psychosocial self-assessment of surgical patients because its total scale proved sufficient psychometric properties to measure clinically significant general psychological distress including depression and/or anxiety. However, our data do not confirm the original item allocation of PHQ-2 and GAD-2 and do also suggest that both subscales have the risk to produce either false negative (cut-off ≥ 3) or false positive (cut-off ≥ 2) screening results. As a consequence, we advise against using PHQ-2 and GAD-2 as exclusive measures of depression and anxiety in preoperative surgical patients. Previous research on depression screening demonstrated several ways of improving the accuracy of short screening tools.

Among the easiest strategies are the inclusion of items asking for the patients' subjective need of therapeutic help (32) and the combination of a first-stage screening with an ultra-short tool at a low cut-off point with an additional second-stage screening using a longer and more accurate instrument of 5 to 15 items (7). To our opinion, the PHQ-4 should both be refined and re-evaluated accordingly in further studies before reconsidering the role of its subscales PHQ-2 and GAD-2 in psychotherapeutic stepped care of surgical patients.

Acknowledgements

The authors wish to thank the teams of the preoperative anaesthesiological assessment clinics and of BRIA (Bridging Intervention in Anaesthesiology), Department of Anesthesiology and Intensive Care Medicine, Campus Charité Mitte and Campus Virchow-Klinikum, Charité - University Medicine Berlin, for the excellent help with patient care, data collection, and analysis.

Contribution details

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Analysis and interpretation of data: LFK, CDS, JT, KW, ALS, EWG, TN, HK.
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Funding

This work was supported by the DFG (German Research Foundation, Grant KR 3836/3-1).

Competing interests

None declared.

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Research and Best Practice

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Research and Best Practice

Clinical Health Promotion in the Czech Republic: Standards Compliance and Service Provision

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Abstract

Background Clinical health promotion significantly improves treatment outcomes in hospitals and health services on both long and short term. Therefore, the World Health Organization (WHO) and the International Network of Health Promoting Hospitals & Health Services (HPH) developed and validated three easy-to-use tools that have been implemented by many national, regional and local health care organisations as part of their quality management framework. However, the compliance with and use of these standards and models, as well as the actual provision of health promotion services, are seldom published. The aim was to evaluate the compliance with the current WHO-HPH Standards and the related documentation models compared with the international baseline data from 3 historic control groups from 2005, 2008 and 2012.

Methods In a cross-sectional design, 8 clinical departments from the Czech Republic were included, and 400 consecutive medical records from a random date were evaluated. Data were collected on standards compliance and service provision using 3 tools: the 5 overall WHO-HPH Standards (2005); the HPH DOC-ACT model (2007) on clinical health promotion intervention; and the HPH DATA model (2012) for medical records documentation of the patients' need for health promotion intervention. The international baseline data originated from the historic control groups of 38 hospitals in 8 countries (2005); 17 from six countries (2007) and 68 from 11 countries (2012).

Results The overall compliance with the WHO-HPH Standards is significantly higher at present compared to the international baseline data (2005); the compliance rates were 66% versus 53%, respectively ($P < 0.01$). The patients' current needs for health promotion intervention were documented to a similar degree as in the historic control group, and the percentages were 66% (26-98%) versus 66% (29-94%), respectively. The provision of health promotion intervention to patients who need it is significantly lower at present, with an overall rate of 16% (13-24%) versus 30% (10-36%), with $p < 0.05$ for motivational activities. Additionally, 14% (13-20%) versus 23% (6-40%), with $p < 0.01$, had documented intervention programmes. Further 16-27% compared to 0-3% ($p < 0.01$) of the patients in need had insufficient information for identifying whether any interventions had taken place.

Conclusion The overall compliance with the WHO-HPH standards is high at present. However, there is inadequate provision of clinical health promotion activities to patients in need, indicating that substantial benefits would result from implementing clinical health promotion. New research on implementation strategies is urgently needed.

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Clin Health Promot 2014; 4:15-21

Introduction

Clinical health promotion is a patient-centred approach to healthcare services characterised by integrating health promotion into the clinical pathway. The benefits of clinical health promotion include improved treatment results, lower costs and better patient safety (1-3). Health promotion in hospitals and health services also includes promoting healthy clinical workplaces. The overall goal is better health gain for patients, staff and community.

In general, the reported benefits of health promotion are often from long-term assessments (4-6). In addition to reducing the burden of disease, there appears to be a tremendous clinical effect on short term, such as through improving outcomes in diabetes patients via comprehensive health promotion and rehabilitation programmes (7), reducing postoperative complications by introducing intensive health promotion interventions before surgery (8-11) and improving mental health through smoking cessation

intervention in psychiatry and other settings (12).

Therefore, systematic implementation of effective health promotion programmes has become a key quality component in hospitals and health services, along with clinical effectiveness and patient safety (13-15). Based on the International Society for Quality in Health Care criteria (www.isqua.org and 16), the World Health Organisation (WHO) and the International Network of Health Promoting Hospitals & Health Services (HPH) developed, validated and published 5 overall standards for health promotion in hospitals (17). Conventionally, hospital quality management involves planning, implementation, evaluation, and continuous improvement of all clinical and non-clinical activities. The WHO-HPH Standards fit directly into these quality improvement efforts by helping managers and staff assess and improve health promotion activities and their provision (16;18).

Alongside the standards, two other tools have been developed and internationally validated to support the implementation of and follow-up on health promotion in daily clinical practice. All tools are easy to use and independent of local documentation routines. Altogether the tools are:

- The five WHO-HPH Standards with 40 measurable elements that can be used at the hospital or department level for addressing health promotion. They span the domains of 1) management policy, 2) patient assessment, 3) patient information and intervention, 4) promoting a healthy workplace and 5) continuity and cooperation (Figure 1) (17).
- The two models for auditing medical records at the individual patient level:
    - HPH DATA with 9 questions for documenting the patients' needs for health promotion (Table 2) (19).
    - HPH Doc-Act with 15 international codes for documenting the health promotion activities provided (Table 3) (20).

The DATA Model serve to visualise health promotion needs in the medical records, and the Doc-Act Model serves to visualise the related activities provided (such as identification of daily smoking and the following participation in a cessation course). They serve as practical ways to measure the medical record documentation of WHO-HPH Standards 2 and 3, respectively. They were developed in international working groups and have been tested by clinicians, who found them understandable, applicable and sufficient. The tools are characterised by high inter-observer reliability across specialities and countries (19;20).

Many national, regional and local health services have implemented, completely or in part, the WHO-HPH Standards and the two supportive tools as part of their quality management framework. However, assessing health promotion needs and administration of health promotion activities in the clinic is still a novel field, and knowledge on the present compliance rate and progress is sparse.

Therefore, the aim of this study was to evaluate current compliance with the WHO-HPH Standards and related documentation models in the Czech Republic compared with the international baseline data in three historic control groups from 2005, 2008 and 2012.

Methods

The study design is cross-sectional with a comparison between current and international baseline data from historic control groups (primarily from Europe, but other continents are also included).

The inclusion criteria for the present Czech group were clinical departments responsible for patient treatment at member hospitals of the International Network of Health Promoting Hospitals & Health Services (www.hphnet.org). Both in-patient wards and outpatient clinics were included; however, only one department from each hospital was included in the study. Exclusion criteria included paediatric and palliative departments as well as nursing homes, because the WHO-HPH standards and one of the tools have not been validated for these patient groups (16;19).

We assessed compliance by categorising measurable elements from the WHO-HPH Standards as either compliant or non-compliant. For the HPH DATA Model and the HPH Doc-Act Model, medical record data were registered as either categorisable, i.e. cases where information was sufficient for identifying the patient's need for health promotion (e.g., a high risk patient: "The patient smokes ten cigarettes per day" or a low risk patient: "No smoking during the last 3 years") or not categorisable, i.e. cases lacking sufficient information for identifying the patient's need for health promotion (e.g., "the patient smells of tobacco"). (see Table 2)

Study Participants and Setting

Eight clinical departments from eight HPH member hospitals in the Czech Republic responded to an open call and were included in the study after informed consent from both department and hospital management. Three were departments of lung diseases, and the remaining departments were internal medicine, surgery, orthopaedic surgery, nephrology and cardiology.

Research and Best Practice

The departments were from different types of hospitals. According to national health care regulations, Czech authorities and/or private quality accreditation programmes externally assessed all hospitals.

The international baseline data were obtained from historic control groups. The WHO-HPH Standards data originated from 38 hospitals in eight countries: the Czech Republic, Ireland, Lithuania, Slovenia, South Africa, Sweden, Germany and Italy (21). Overall, 14 of the 38 hospitals had undergone external quality assessment. Hospital characteristics are given in Table 1.

Table 1 Characteristics of the eight current departments and 38 international hospitals from the historic control group

		Present group	Control group
Status of hospital	Public	5/8	32/38
	Private not for profit	1/8	4/38
	Private for profit	2/8	2/38
Type of hospital	Community hospital	3/8	21/38
	Large teaching general	1/8	7/38
	University hospital	3/8	4/38
	Specialised hospital	1/8	6/38
Catchment area	Rural	0/8	3/38
	Urban	1/8	8/38
	Mixed	7/8	27/38
Number of beds	<200	0/8	5/38
	200 to 399	3/8	11/38
	400 to 599	2/8	9/38
	>599	3/8	13/38
HPH Member	Yes	8/8	28/38
	No	0/8	10/38

The historic baseline data for the HPH DOC-ACT model were obtained from 17 clinical hospital departments in 6 countries: Estonia, Ireland, Italy, Canada, Sweden and the United Kingdom. These were departments of surgery, orthopaedic surgery, internal medicine (including lung disease), geriatrics, psychiatry and paediatrics (20).

The historic baseline data for the HPH-DATA model were collected in 68 clinical departments at different hospitals in 11 countries/regions: Austria, Czech Republic, Estonia, Finland, Germany, Italy, Canada, Norway, Spain, Switzerland and Taiwan (19). The departments were from large and small hospitals as well as university hospitals with in- and out-patients from internal medicine (including lung diseases), cardiology, nephrology, oncology, geriatrics, surgery, orthopaedic surgery, urology and emergency settings and intensive care units.

Data collection

The current study's eight participating departments in the Czech Republic received an information manual, technical support, and an online template for anonymous data collection. The data collection process took 6-8 months and was similar to that described for the historic control groups (19-21). The process elements were:

1. A self-assessment tool for WHO-HPH Standards at each department (17;21)
2. HPH tools for the internal audit of 50 x 8 consecutive medical records performed at a random date before involvement in the project (DATA Model, Doc-Act Model) (19;20)

The WHO Country Office and the Ministry of Health of the Czech Republic performed all translations. The Danish Data Protection Agency for international studies, the Internal Research Boards of Bispebjerg Hospital and ethics board of each participating hospital approved the project. All person-identifiable data collected from patients and staff were anonymised at the source.

Data analysis

The compliance scores were categorised by rating each of the 40 measurable WHO-HPH Standards elements as non-compliant or compliant. It is worth noticing that category of non-compliance thus also included partially compliant scores. We calculated the number of compliant scores for each of the five standards as well as for the overall fulfilment. Results were presented as percentages. The level of indicator fulfilment was also calculated as percentages.

The standard compliance results were compared with the previous findings from the historic control group. However, the five standards previously assessed in the historic control group originally included 68 measurable elements that were later reduced to the 40 measurable elements used today (16;21). Also, the compliance score was originally categorised as compliant, partially compliant and non-compliant; so only the compliant category from the historical control group was used for comparison with the present group. This was done with Fisher's exact tests and a p-value lower than 0.05 was considered statistically significant.

Research and Best Practice

Results

WHO-HPH Standards

The eight clinical departments from the Czech Republic had a compliance of 60% for standard 1, 73% for standard 2, 50% for standard 3, 65% for standard 4 and 78% for standard 5. The overall compliance was significantly higher in the present group: 66% (8 departments across 40 measurable elements. 210 instances of compliance of 320 possible) compared to 53% (38 hospitals across 68 measurable elements. 936 instances of compliance of 2584 possible) in the historic control group ($p < 0.01$). Compliance results were consistent by each department; however, the number of departments was too small to allow further statistical analyses on this basis.

3 of the 40 measurable elements belonged to the lowest score quartile (0-2 instances of compliance); 2 of these lacked compliance in all of the departments. 10 constituted the highest quartile (7-8 instances of compliance); 7 of these were met with full compliance in all departments (Figure 1).

The HPH DATA model

The documentation of patients' needs for health promotion intervention was similar to the historic control group; 66% (26-98%) had information that was categorisable versus 66% (29-94%) ($p = 0.85$), respectively. Physical activity and alcohol consumption had the worst documentation, and these categories were not significantly different between the present and historic control group. The details are given in Table 2.

The HPH Doc-Act model

The actual provision of health promotion intervention to patients with identified needs in the present group was significantly lower than in the historic control group. Documented motivational activities for nutrition (24 vs. 32%), physical activity (21 vs. 36%), psycho-social relations (16 vs. 30%) and integrated counselling (13 vs. 33%), were significantly lower in the present group than in the historic group ($p < 0.01$). Only motivational activities for alcohol was higher in the present group (15 vs. 10%) ($p < 0.01$) (Table 3).

Documented intervention programmes for physical exercise (14 vs. 29%), psycho-social support (15 vs. 21%) and integrated rehabilitation (13 vs. 29%) were significantly lower in the present group also ($p < 0.01$). Just intervention programs for smoking cessation (13 vs. 8%) and alcohol (13 vs. 6%) were higher ($p < 0.01$) (Table 3).

Overall, 16% (13-24%) in the present group versus 30% (10-36%) in the historic control group ($p < 0.05$) had documented motivational activities and 14% (13-20%) in the present group versus 23% (6-40%) in the historic control group ($p < 0.01$) had documented intervention programs. An additional 16-27% of the patients in the present group had insufficient information for identi-

Figure 1 Compliance results of the 40 measurable elements in the five WHO-HPH Standards for Health Promotion in hospitals, which were measured by eight clinical departments in the Czech Republic

	Departments 1-8								
Standards/Substandards	A	B	C	D	E	F	G	H	Total
1.1.1. Aims and mission include HP		x	x	x	x		x	x	6
1.1.2. Minutes reaffirm agreement w HPH	x	x		x	x	x	x	x	7
1.1.3. Quality/business plans include HP			x	x	x		x	x	5
1.1.4. Personnel and functions ID'ed for HP	x	x	x	x	x	x	x	x	8
1.2.1. There is a budget for HP									0
1.2.2. HP procedures available		x	x	x	x		x	x	6
1.2.3. HP structures and facilities can be ID'ed			x	x	x		x	x	5
1.3.1. HP intervention data captured	x	x		x			x		4
1.3.2. Assessment of HP established				x			x		2
Total Standard 1: Management Policy									**60%**
2.1.1. Guidelines to ID lifestyle risk exist		x		x			x	x	4
2.1.2. Guidelines have been revised		x		x			x	x	4
2.1.3. Guidelines to ID HP needs exist		x	x	x	x			x	5
2.2.1. Assessment is documented	x	x	x	x	x		x	x	7
2.2.2. Guidelines for reassessing HP needs	x	x	x	x	x	x	x	x	8
2.3.1. Info from referring DR available in MR	x	x	x	x	x	x	x		7
2.3.2. MR documents social/cultural background	x	x		x	x		x	x	6
Total Standard 2: Patient Assessment									**73%**
3.1.1. Information given is recorded in MR			x	x	x		x	x	5
3.1.2. HP activities are documented in MR									0
3.1.3. PT satisfaction assessment integrated in QM	x		x	x	x	x	x		6
3.2.1. General health information is available		x	x	x	x			x	5
3.2.2. Info about highrisk diseases is available		x	x	x	x			x	5
3.2.3. Information on PT organizations available				x			x	x	3
Total Standard 3: Patient Information & Intervention									**50%**

	Departments 1-8								
Substandards:	A	B	C	D	E	F	G	H	Total
4.1.1. Working conditions comply w N/R directives	x	x	x	x	x	x	x	x	8
4.1.2. Staff comply w health and safety	x	x	x	x	x	x	x	x	8
4.2.1. Intro training on HP policy given to new staff		x		x			x	x	4
4.2.2. Staff aware of HP policy		x		x				x	3
4.2.3. HP performance appraisal system exists		x	x	x	x		x	x	6
4.2.4. Practices made by multidisciplinary teams		x	x	x	x		x	x	6
4.2.5. Staff involved in policy-making		x	x	x	x		x	x	6
4.3.1. Policies on health issues avaliable for staff				x			x	x	3
4.3.2. Smoking cessation programmes offered	x			x			x	x	4
4.3.3. Annual staff surveys are carried out			x		x		x	x	4
Total Standard 4: Healthy Workplace									**65%**
5.1.1. Regional policy taken into account		x	x	x	x		x		5
5.1.2. List of partners avaliable	x	x	x	x	x	x	x	x	8
5.1.3. Collaboration based on regional health plan	x	x	x	x	x		x		6
5.1.4. Plan for collaboration w partners avaliable		x	x		x			x	4
5.2.1. Follow-up instructions given	x	x	x	x	x	x	x	x	8
5.2.2. Procedure for info exchange exists	x	x	x	x	x	x	x	x	8
5.2.3. Receiving organization gets info on PT	x		x	x	x		x	x	6
5.2.4. Rehab plan documented in MR	x		x	x	x		x		5
Total Standard 5: Continuity and Cooperation									**78%**
Total Number of measurable elements (of 40)	17	27	27	36	29	10	33	31	
Total All standards									**66%**

Research and Best Practice

Table 2 HPH DATA Model for assessing health promotion needs: The medical record audit results for the documentation of health promotion needs in the present group (400 patients) and historic group (1360 patients) (results expressed as %; W: women; M: men)

		Categorisable (%)				Not categorisable (%)	
		High risk patients		Low risk patients		Unknown	
		Present group	Historic group	Present group	Historic group	Present group	Historic group
A-1	Is the patient's BMI below 20.5?	9	12	81	56	10	32
A-2	Has the patient lost weight in the past three months?	11	15	56	44	33	41
A-3	Has the patient had reduced appetite in the past week?	10	16	38	43	52	41
A-4	Is the patient severely ill? (i.e. stress-metabolic)	63	31	35	63	2	6
B 1	Is the patient's BMI above 25?	60	31	31	35	9	34
B-2	Has the patient's waist exceeded 80 cm (W) or 94 cm (M)?	13	12	13	17	74	71
C-1	Is the patient active less than 30 min/day? (Moderate intensity with pulse increase, e.g. walking, cycling, training)	23	17	23	37	54	46
D-1	Does the patient smoke daily?	20	22	69	64	11	14
E-1	Does the patient's drinking exceed the recommend limits? (Women: 7 weekly, Men: 14)	2	9	59	62	37	29

Table 3 HPH Doc-Act Model for assessing health promotion activities: The medical record audit results for the documentation of health promotion activities in the present group (400 patients) and historic group (1360 patients) (results expressed as %).

		Present Group	Historic Group
7 codes for motivational counselling and motivational interviewing technique related to:			
Tobacco	(BQFS01)*	16	17
Alcohol	(BQFS02)*	15	10
Nutrition	(BQFS03)*	24	32
Physical activity	(BQFS04)*	21	36
Psycho social relations	(BQFS05)*	16	30
Other risk factors	(BQFS06)*	23	25
Integrated counselling (consisting of several factors)	(BQFS19)*	13	33
8 codes for intervention, rehabilitation and after treatment:			
Smoking cessation programme	(BQFT01)*	13	8
Alcohol intervention programme	(BQFT02)*	13	6
Nutrition programme	(BQFT03)*	20	22
Physical exercise intervention	(BQFT04)*	14	29
Psycho social support	(BQFT05)*	15	21
Medical optimisation / Adjustment of medication	(BXAB0)*	-	40
Patient education programme	(BVDY04)*	-	23
Integrated rehabilitation (consisting of several factors)	(BQFT01)*	13	29
Others		20	-

*Systematic classification of treatment and care in Denmark

fying whether an intervention had taken place, which was significantly worse than the control group (0-3%) ($p < 0.01$; Table 3).

Discussion

The purpose of this study was to evaluate current compliance with the WHO-HPH Standards and related documentation models in the Czech Republic compared with historic control group data.

We found that general compliance was significantly higher than in the international baseline data from 2005 and that patients' needs for health promotion were documented to a similar degree. However, we also found that actual provision of health promotion services to patients is significantly lower in the present group.

Based on the sparse literature on integration of effective health promotion into clinical routines, hospital staff, managers and patients generally have a positive approach to health promotion quality management (21-23). The patients usually express acceptance of and preference for effective health promotion programmes that can reduce their complications and period of recovery (24-26). And patients have even been found to be disappointed if informed of, but not offered, health promotion programmes for improving their treatment results (27).

Many healthcare services have included some or all of the three tools assessed in this study – examples are the national quality management programmes in Ireland, Sweden and Denmark, amongst others. Many more health services and hospitals have implemented these

tools regionally and locally.

The main focus of this implementation has been on quality management, policy making, managerial decision-making and measuring the progress by meeting process-related standards and indicators, such as maintaining health promotion policies, clinical guidelines, lists and follow-up procedures. However, it is possible that quality management may have limited, or less than anticipated, effect on delivery of care (28;29).

Recording patients' needs for health promotion is a necessary prerequisite for systematically offering effective programmes to at-risk patients. Offering relevant and effective treatment usually follows the identification of symptoms and diagnoses. This is the case for pneumonia, fractures, diabetes, hypertension, mental illness and so on. In contrast, diagnosing smoking, malnutrition, risky alcohol drinking and physical inactivity are only seldom followed by relevant and effective intervention offers, even though such health promotion interventions could improve treatment outcomes.

To benefit from adding clinical health promotion to patient pathways, the focus needs to be on implementing a patient-centred activity and verifying its effectiveness with a later assessment. An important element of implementing health promotion interventions is educating and training the staff, since the implementation rate has been shown to double when the staff is both competent and engaged (30).

Additionally, a successful, systematic implementation of clinical health promotion would help patients in high-risk and marginalised groups who often face poor treatment outcomes - thus reducing health inequity.

Bias and limitations

This study has a number of biases and limitations. However, some of these biases and limitations are balanced. First, the use of historic control groups may introduce systematic bias, either due to improving the implementation over time from continuously increasing the interest in health promotion or reducing the implementation because of short-sighted resource cutting for health promotion activities in an economic crisis.

Another bias relates exclusively to the WHO-HPH Standards, which historically included a higher quantity of measurable elements than the current version. A higher number of elements increase the possibility of chance compliance, which in turn reduces the differences between the two groups. On the other hand, compliance to a given standard may be low when it includes more measurable elements, especially if the elements are independent. That, however, was not the case in the present study.

Furthermore, the historic control group data were measured for entire hospitals with many departments instead of for individual departments alone; therefore, the requirement for compliance was broader compared to individual departments, which may explain some of the differences between the present and historic control groups. Nevertheless, the management policy, common guidelines and general process standards often cover all departments simultaneously, which facilitates compliance for the entire hospital.

A limitation of the present study is the use of only International HPH Network member hospitals. Generalisation of the results outside of HPH member hospitals and health services should be considered.

Conclusions

This study clearly shows that the main challenge of health promotion performance and service provision is related to the implementation of the activities. Additionally, quality management strategies and action plans should focus on the individual patient's needs and include a follow-up to assess progress on specific items. Introducing standards and patient assessment is of little avail, if one does not first ensure that these can be implemented and can contribute to health gains.

The benefits of the systematic implementation of effective health promotion programmes are substantial; offering health promotion can prevent complications, re-admissions, prolonged recovery and other undesired elements in a patient's clinical pathway. New competences in clinical health promotion should be developed for patients and relatives, forming a better bridge with primary health care. Additionally, the staff members should be offered more training and knowledge as well as a workplace that offers to enhance their health.

The societal effects of health promotion activities are predominantly economic. They include the reduced use of health care recourses for individual high-risk patients, which are due, in the short term, to reduced complications, shorter recovery and fewer re-admissions. In the long term, clinical health promotion can also help reduce aggravation of existing, and development of new, chronic diseases.

The main scientific ramifications of this study include highlighting the need for further investigations on this

Research and Best Practice

topic. Additionally, we need to develop high-quality studies on effective implementation strategies with the aim of connecting quality management to the provision of evidence-based, effective health promotion interventions in clinical care settings

Contribution details

Conception and design: JKS, HT
Acquisition of data: BR, ZS, ZD, MR, JC, MV, MO, JKS, HT
Analysis and interpretation of data: JKS, HT
Drafting the article: JKS, HT
Revising the article critically for important intellectual content: BR, ZS, ZD, MR, JC, MV, MO, JKS, HT
Final approval of the version to be published: BR, ZS, ZD, MR, JC, MV, MO, JKS, HT

Acknowledgements

Milena Kalvachová, National HPH Coordinator and Dr. Alena Šteflová, Head of WHO Country Office for technical support throughout the entire project period; the Department of Surgery at Na Homolce Hospital for data collection - all of whom from the Czech Republic. The study was supported by the Ministry of Health in Czech Republic, which, following to good research practice, had no influence on developing the protocol, data collection, analysis, interpretation or publication.

Competing interests

None declared.

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Hospital employees' experience with a Pedometer challenge in a health promoting hospital

Charles Sounan[1], Mélanie Lavoie-Tremblay[1], Genevieve Lavigne[1], Kara Martin[2], Guylaine Cyr[1]

Abstract

Background Many health care centers join the International Network of Health Promoting Hospitals and Health Services (the HPH Network) initiated under World Health Organization. In this context, a university affiliated Canadian multisite health care center, which is also a member of the HPH Network, mounted a pedometer-based program for health care providers. Very few studies have examined the feasibility of a pedometer programme for health care providers in hospital settings, or these professionals' experiences with such programmes. The overall purpose of the study was to describe the experience of hospital employees, who participated in the pedometer activity challenge.

Methods The data for this qualitative study was collected through focus groups and individual interviews. Participants (n = 32) were hospital employees who had participated in an 8-week pedometer challenge.

Results According to most participants, the programme raised their awareness about the importance of keeping active and maintaining healthy habits. Half of the participants even saw improvements in their physiological problems, such as lower levels of bad cholesterol, lower blood glucose, improved blood pressure, and improved lung function.

Conclusions Health care organisations would greatly benefit from health promoting activities, for the health and well-being of their employees and their organisation.

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Clin Health Promot 2013; 4:23-9

Introduction

Although the health benefits of physical activity are well recognized (1), physical inactivity remains a leading global risk factor for mortality and for burden of disease (2). Because walking is a readily available, inexpensive form of physical activity, numerous walking programmes have been developed in an effort to increase moderate physical activity levels. However, programmes and campaigns designed to publicise the need to walk at least an hour a day revealed that less than one-third of Canadians meet this recommendation (3). In recent years, research has suggested that using pedometers to measure physical activity levels can serve as a potential motivational tool that helps people develop self-monitoring strategies and increase their level of activity (4-8). A pedometer or step counter is a small, light, electronic device that is most often clipped to an individual's clothing at the hip. It is a measurement tool utilised for estimating the distance traveled by foot by recording the number of steps taken. Systematic reviews have found that pedometers, combined with a goal-setting programme, can lead to short-term increases in steps walked daily by as much as 2,000 steps (9-10), lower blood pressure (9) and produce modest weight loss (11). Kang and colleagues (10) conducted a meta-analysis of 32 studies that investigated the impact of pedometer-based physical activity interventions. Their results indicated a moderate and positive effect, suggesting that pedometers are indeed a useful tool for increasing physical activity levels.

Although the above-mentioned study results are highly informative, very little research has examined the feasibility of a pedometer programme for health care providers in hospital settings, or these professionals' experience under such a program. Few studies have been performed in the workplace where a larger audience could perhaps be reached, and where an impact can be achieved on both the participating individuals and the population as a whole (12). Indeed, more and more health care centers join the International Network of Health Promoting Hospitals & Health Services (HPH) and understand the importance

of implementing healthy strategies in order to promote and maintain employee health (13). In this context, a university-affiliated, multisite health care center, also a member of the HPH network, offered a pedometer-based programme for its health care providers. The results of the pedometer programme evaluation suggested that the pedometer programme had a significant positive impact on participants' weight and body mass index (BMI), systolic and diastolic blood pressure, total cholesterol levels, as well as fatigue and stress after the 8 weeks (14). Furthermore, hospital employees involved in the research maintained a high level of physical activity and healthy BMI for up to 6 months after the programme (15). The overall purpose of this study was to describe the experience of the hospital employees, who joined in the pedometer activity challenge.

Perception of pedometer programme benefits and barriers

Qualitative studies have found that participants highlight several benefits of pedometer-based programmes such as self-monitoring aspects, their use as motivation tool, low cost, application to individual or team intervention as well as their health benefits (16-20).

First, pedometers seem to make participants more aware of their physical activity levels. For instance, Gardner and Campagna (16) conducted in-depth interviews and focus group interviews with a sample of 10 middle-aged Canadian women involved in a 4-week pedometer-based intervention and reported that the women had learned something about their physical activity patterns by wearing the pedometer and recording their daily steps. The self-monitoring advantages of wearing a pedometer daily were also noted among other samples (e.g., rural community sample (17), inactive or irregularly active women (18;19), and college employees (20)). Participants in a 6-week intervention said they were surprised by how little they walked each day and how many steps could be added simply by parking their cars farther away or by walking around large stores (19). A similar sedentary lifestyle realisation emerged from Fukuoka and colleagues' study (18) of a 3-week intervention in a sample of sedentary women. These qualitative results are in line with a recent meta-analysis showing that the main predictor of successful physical activity behavioral change was self-monitoring (21).

Second, the pedometer appears to be a powerful motivational tool. Focus groups among participants in a pedometer-based, community intervention revealed that the pedometer provided participants with useful feedback, which served as a source of encouragement (22). Similarly, focus groups conducted a few months after a walking intervention among rural African-American women revealed that wearing a pedometer provided motivation and encouragement to walk more (17). Furthermore, setting personal goals also appeared to be a useful motivator in pedometer-based intervention programmes (18-20).

Third, the practical advantages of pedometer-based physical activity intervention have been emphasised. These advantages included the fact that walking is an inexpensive activity that can be done alone and can be easily incorporated into a daily routine (22). Also, the sense of accountability generated in studies where participants had to make diary entries (17) or submit weekly logs (19) helped motivate participants to stick with the programme.

Fourth, results from a study revealed that participants enjoyed and were motivated by the friendly competition between walking groups (17). Similarly, participants from another intervention mentioned that they would have liked to have known the average number of steps walked by other women in the program in order to gauge their own progress and motivate themselves to walk more (19). However, a study conducted by Behrens and colleagues (23) suggested that a competition-based physical activity programme using pedometers may not be the most effective way to increase physical activity in the workplace.

Finally, health benefits were noted by participants following a 10-week walking intervention with pedometers (24) in a university campus setting. The results revealed that participants perceived improvements in their mood, energy levels and ability to cope as well as an increased awareness of their personal health.

The barriers to walking mentioned in different qualitative studies include the weather, boredom as well as issues related to the need to carry heavy items after choosing to walk to the grocery store or to work (22). Haines and colleagues (25) conducted focus groups and phone interviews with participants who dropped out of a 12-week walking programme in the workplace and found that the main barriers were lack of time, low motivation, job commitments as well as physical problems. Time pressure was also mentioned as a barrier in another workplace walking intervention (24).

Most studies that evaluated the qualitative impact of pedometer-based intervention programmes were conducted with populations at risk, such as inactive individuals. The specific aims of this study were to better understand the motivators and barriers associated with the pedom-

eter programme, and its benefits for hospital workers and the organisation.

Methods

Design

The data for this qualitative study was collected through focus groups and individual interviews. Participants were hospital employees who participated in an 8-week pedometer challenge in a university-affiliated, multisite healthcare centre in Quebec, Canada.

Intervention

The pedometer intervention, called the "Wellness Challenge," consisted of a one-hour on-site lunch lecture, 30-minutes one-on-one pre- and post-evaluations during work hours (including cardiovascular, diabetes, insomnia, stress and fatigue risk assessments and interpretation by a health professional from the McGill Cardiovascular Health Improvement Program, CHIP) and the 8-week pedometer activity challenge (September 19, 2011 to November 13, 2011). The lunch-hour lecture provided information on physical activity and nutrition as well as instructions on proper use of the pedometer. The activity challenge involved tracking physical activity on a website (www.myhealthcheckup.ca). Pedometer step counts or the step equivalents of other physical activities were recorded daily. A goal of 10,000 steps was used to motivate participants, and a goal of being the first site to cross Canada virtually as a group was used to motivate the teams. The website allowed participants to track their progress as individuals, as a site and as an entire group. All eligible participants received a pedometer (StepsCount) at the lecture and a code to access the program website. StepsCount pedometers have a research grade accuracy rating of no more than a (+/–) 3% margin of error and have also been tested for long term accuracy in maintaining their ability to count accurately over time. (26)

Procedure

Ethical approval was obtained from the Research Ethics Board (REB) of the participating organisation. In 2012, a questionnaire was sent out to the hospital employees who participated in the 8-week pedometer challenge as part of a research programme. A total of 157 participants (13 males and 144 females) completed the questionnaire, designed to collect information about the impact of the pedometer challenge on hospital employees six months after the end of the challenge (15). Participants were asked to complete a section at the end of the questionnaire, if they were interested in participating in interviews. The research team contacted all interested participants (n= 58) and provided them with details about the interview schedule. Three focus groups (with 5 to 7 participants) as well as 15 semi-structured individual interviews were conducted in June and July 2012. A total of 32 participants were interviewed. The other participants were not available during the timeline schedule for the interviews. The study was explained verbally to each participant by a member of the research team, and written consent was obtained. To protect confidentiality, each participant was identified by a code. Each interview lasted 45 minutes and was conducted by the research team in a private room at the research centre.

Instrument

A semi-structured interview guide served as a data collection tool for interviews and focus groups. Based on the WHO "Global Strategy on Diet, Physical Activity and Health," the main themes addressed were: motivators and barriers to participation in the workplace pedometer programme, the programme's impact at an individual level and the benefits of the programme for the Health Promoting Hospital. A socio-demographic profile was developed at the beginning of each interview and focus group.

Data Analysis

Because the study was descriptive in nature, the analysis was primarily guided by the interview questions rather than a specific theoretical paradigm (27). Interviews were audio-recorded and transcribed. The data generated by the interviews and focus groups were analysed using NVivo according to the method proposed by Miles and Huberman (28). Data analysis consisted of three concurrent streams of activities: condensing the data (coding individual interview data to identify major themes and categories), presenting the data (data display of themes from all interviews) and elaborating/verifying the data. Two researchers independently coded the transcripts from a set of data to ensure consensus and regularly met to discuss data analysis and interpretation.

Results

Participants

The sample was composed of 32 women. The mean age of participants was 49 years. One participant (3.1%) had a doctoral degree, five participants (15.6%) had a master's degree, ten (31.2%) had a bachelor's degree, eleven (34.3%) had a technical or college degree and five (15.6%) had a certificate. Participants performed different duties such as clerical (n = 18, 56.2%), professional (ex, audiologist, social worker) (n = 8, 25%), nursing (n = 4, 12.5%), and management (n = 2, 6.2%).

Research and Best Practice

Participants had been performing their current duties for an average of 12 years, ranging from 1 to 45 years. A total of 31 participants over 32 years (96.8%) had a full-time position. All 32 participants (100%) had a fixed daytime position. Up to 26 participants (81.2%) did not work on weekends and four participants (12.5%) worked every other weekend; finally two participants (6.2%) worked occasionally on weekends.

The common themes that emerged from the interviews were grouped into five major themes: motivators to participate in the workplace pedometer programme, facilitating factors and barriers, individual outcomes, maintenance and organisational benefits

Motivators to participate in the workplace pedometer programme

The majority of participants were interested in the programme because they wanted to become more active, improve their overall health and fitness. Close to half of the participants also saw the programme as an opportunity to lose weight. Many participants were motivated by the challenge itself, because it was in their workplace, and by the fact that it facilitated and encouraged team work.

During the interviews participants described that:

- *... for health and I find I spend a lot of time at my desk. And I don't move from there. So it's motivating me to like get out at lunch time (participant 1).*
- *Especially, we work in the health system. We should be paying more attention to what do we represent and... I just thought it was interesting basically for that. Yeah. I think it's just health, like I'm really interested in my own health (participant 7).*
- *That was the challenge. We had a goal, a challenge. To have a goal, like as a collective, every step you take counts towards the group. Like it's more motivating. It's more motivating in that way. I mean, yeah, I sort of keep it up now, but I found I was more motivated when it was a group effort knowing that everybody had to contribute their part made it easier to participate. Cause you were aware that the group was counting on your participation (participant 18).*
- *I thought: it's time I took charge of myself. And it was fun to do that with my assistants (participant 6).*
- *Oh! I thought it would be really interesting to do something at work, like getting involved with my coworkers on a common goal. It was like we encouraged each other. It was like that ... I don't know. It interested me (participant 18).*

Factors that facilitated participation in the programme

According to most participants, the team aspect of the activities was the most motivating element of the challenge. It also appeared easier for participants to maintain an activity with the help of a well-structured programme and a good support team (i.e., the research team) as well as the website. Furthermore, receiving information about the programme in their workplace, rather than seeking it out on their own, was said to have been helpful. Also, the pedometer and the website were mentioned as a source of stimulation to get moving because they specified the number of steps walked, thus providing a benchmark for precisely evaluating how well they were doing.

During the interviews participants described that:

- *It's always better in a group cause, I find we motivate each other (participant 3).*
- *It's easy to reach people. Things like that. We know we have everyone within reach. And the fact that you have the meetings, the information sessions. It's onsite. We don't have to go to another site (participant 3).*
- *Well first, you guys made it easy. I mean, it was basically handed to us. And you came here and you helped us get organised. I mean, that made it very easy. We didn't have to go elsewhere. So that's helpful when people are busy to be able to fit it in their schedules. And that made it easy not only for me, but for everyone else (participant 12).*
- *I think that when you get feedback, a pedometer, a calendar, something that gives you feedback, you can see the progress, and it's a lot more motivating (participant 17).*

Factors that limit programme participation

Some participants mentioned factors that limited their participation in the walking challenge. The limiting factors that were most often cited were related to weather, such as cold and rainy conditions. Bad weather made it difficult to engage in physical activity and maintain healthy habits.

During the interviews participants described that:

- *So if the weather is cold, rainy, snowy that's like, for me, it was like during the winter time, I found like I, you know, you don't participate as much because the weather is a big problem (participant 3).*
- *But I think maintaining is always the hardest part of everything (participant 1).*

Research and Best Practice

Positive impact of participating in the programme

According to most participants, participating in the programme made them more aware of the importance of keeping active and maintaining healthy habits. Half of participants even improved a physiological problem by lowering bad cholesterol or blood glucose levels, or improving their blood pressure or lung function. Nearly half of the participants felt they were in better physical shape and said they had more energy, made better dietary decisions, and were more conscious of the importance of healthy eating habits. Half of participants also lost or maintained their weight, felt less stress and some even slept better.

During the interviews participants described that:

- *It really lowered my cholesterol level (participant 10).*
- *Also right now, I climb from ground floor to 5th floor. I'm not out of breath (participant 5).*
- *If I look back to a year ago, I'm still a lot more active then I was. Yes. Really a good trend, but overall, it's better. Sleep. Good mood too. I think that's enough. I don't know. It's a whole (participant 11).*
- *It got me thinking about my house habits, my exercise habits, my food habits, the choices I make around food... it's like a domino effect (participant 18).*
- *Well, it kick started me to lose 20 pounds (participant 1).*
- *... even the walk home was good. It was time to just like, it's my time. Yeah. To de-stress (participant 16).*

Maintenance

Most participants maintained their physical activity levels after the programme ended. Nearly half of participants included a new physical activity other than their walking routine such as biking, dancing, yoga, etc. Some participants stopped engaging in all forms of physical activity after the program, mostly because of family obligations or for no particular reason.

During the interviews participants described that:

- *Like me, I continue to do the stairs. And I walk like not every day, but some nights, after supper (participant 2).*
- *I do dance. I learn some social dance and sometimes I go to line dance also... Also I did some exercises. But since I begin the program, like it motivates me more, you know (participant 5).*
- *Some of my co-workers have small children and it was harder for them. I remember when I had younger children. It was homework, lessons ... (participant 11).*

Organisational benefits to support health promoting activities

All participants considered it important for the organisation to encourage health promoting activities for employees to help them become more active and improve their health. Some participants mentioned that they were less stressed, because the programme offered a break time that energised them. Many participants mentioned that it is profitable for an organisation to have active and healthy employees. Half of participants highlighted that they were thankful that their organisation cared about their quality of life in the workplace, their well-being and their overall health. Finally, some participants mentioned that their workplace as a health promoting organisation should lead by example.

During the interviews participants described that:

- *You know, studies prove that healthy employees means less time off, less cost to the system. So, you know, I think this programme is very beneficial and I'd like to really see it continue (participant 4).*
- *Because you get a sense of belonging. And then too, your employees are more fit (participant 9).*
- *But, you know, if there's stress at work and they're tired and they're busy. They come home and they're tired. They don't feel like exercising. But if something like that is in place at work, at least it gives them a choice (participant 4).*
- *And it's nice that the hospital takes our wellbeing into account especially since we're in the hospital or health care industry (participant 3).*

Discussion

This study helped shed light on the qualitative experience of participating in an 8-week, pedometer-based walking programme. A total of 32 individuals were interviewed either during focus groups or individual interviews in order to understand what factors facilitated or impeded the programme. This study was conducted in a university-affiliated, multisite health care organisation that has supported the World Health Organisation's Health Promoting Hospitals Network for several years. The present qualitative research led to a number of findings which are discussed below.

First, the programme appealed to participants because it offered means to become more active and improve their overall health. Improving their physical fitness and losing weight motivated participants to join the programme. In fact, participants mentioned improvements in their physical health such as weight loss, better blood pressure and lower levels of bad cholesterol, bet-

ter overall fitness and better eating habits. This is consistent with the previous results from the same research programme (14;15) showing significant decreases in participants' weight and BMI, blood pressure, cholesterol levels as well as fatigue, insomnia and stress. Research by Gilson and colleagues (24) also reported perceived improvements in participants' mood, energy levels and awareness of their health, not to mention a number of studies (29;30) that identified physical health improvements following a walking intervention.

Second, the programme design facilitated a sense of team work by setting individual goals (i.e., 10,000 steps per day) as well as team goals (i.e., being the first site to cross Canada virtually as a group). Furthermore, the progress of individuals, sites and the entire group could be tracked through the research website. The interviews suggested that team work and informal competition were successful in motivating participants. Previous studies also found that friendly competition between walking groups can be a source of motivation. (17;19).

Third, the pedometer itself was mentioned as a valuable source of motivation because it provided participants with immediate and constant feedback, and thus helped them to quickly and easily evaluate how they were doing each day. The powerful, self-monitoring advantage of wearing a pedometer has been consistently reported in other studies conducted in diverse populations such as inactive individuals and college employees (16-20;22), and in a meta-analysis of 122 studies (21).

Fourth, research shows that having to record the number of steps walked either in a daily or weekly log is a motivator, because it created a sense of accountability. (17;19) Participants in our study did not mention this factor as a motivator, even though they were recording their daily steps. However, as previously noted, participants were motivated by the website, which posted updates of their individual and team progress daily. It can therefore be argued that recording their daily steps might have been an indirect motivator. Future research is needed to better understand the role of accountability among different populations.

The main barrier mentioned was bad weather. Participants said that the rain and cold reduced their interest in walking outside. Bad weather was also found to be a barrier to walking in other research (22). Haines and colleagues (25) as well as Gilson and colleagues (24) reported that time pressure was another major barrier to walking programmes, a factor not mentioned by participants in our study. The organisational commitment to the programme may have helped participants feel comfortable in moving more around the workplace, where they spend a significant portion of their time. Thus, they might have felt less pressure to walk primarily after work, when family obligations might be their priority.

The interviews in this study were conducted over six months after the end of the programme, allowing an evaluation on how well the improvements in physical activity were maintained over time. The results suggest that most participants maintained a higher level of physical activity. The results also suggest that nearly half of the individuals interviewed had incorporated new physical activities into their routine. The 6-month follow-up also found that three-quarters of the overall sample maintained their level of physical activity (15). These are very important findings considering that very little is known about the longitudinal impact of walking programmes.

Organisational Benefits

The costs of health problems in organisations have been estimated to be as high as 14 billion dollars a year in Canada (31), 20 billion Euros a year in the European Union (32) and up to 150 billion dollars in the United States (33). It is therefore important for organisations to support and encourage health promotion activities. In this study, all participants mentioned the importance for the organization to suggest health promoting activities to their employees and to encourage them to be more active and adopt a healthier lifestyle. The previous results from this research programme (14) showed significantly reduced levels of stress, fatigue and insomnia -a finding expressed by some interview participants. Furthermore, half of the interview participants were thankful that their organisation cared about their health and quality of life. This positive feeling towards the organisation can lead to increased organisational engagement and, eventually, lower turnover rates.

Limitations

One significant limitation of this study was that only the participants who completed the 6-month follow-up questionnaire were asked to participate in the interviews. Future research should include post-programme interviews as well as an effort to contact the participants who dropped out of the intervention.

Conclusions

The results of this study revealed that participants were strongly motivated by the physical activity challenge offered to them in their workplace. Health care organisations would greatly benefit by supporting health promoting activities given their positive impact not only on

Research and Best Practice

their employees' health and well-being, but also on the health of their organisation.

Acknowledgments

The authors would like to acknowledge Dr. Steven Grover and Ilka Lowensteyn of the McGill Cardiovascular Health Improvement Program (CHIP) for the development of the pedometer programme.

Contribution details

Conception and design: CS, MLT, GL, KM, GC
Acquisition of data: GC, KM, MLT, CS
Analysis and interpretation of data: GC, MLT, CS, KM, GL
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Revising the article critically for important intellectual content: CS, MLT, GL, GC
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Funding

This work was supported by a grant (PHE #104089) from the Canadian Institutes of Health Research (CIHR) and the Fonds de la Recherche en Santé du Québec.. Geneviève L. Lavigne, Ph.D., acknowledges postdoctoral funding support from Canadian Institutes of Health Research (CIHR- FRN# 123729). Melanie Lavoie-Tremblay acknowledges career award Junior 2 funding from (FRSQ#22495) Fonds de la Recherche en santé du Québec (FRSQ).

Competing interests

None declared.

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Research and Best Practice - New PHD Theses on Clinical HP

Scand-Ankle: Cost-effectiveness of Alcohol Cessation Intervention in Acute Fracture Surgery

Bolette Pedersen

Patients with hazardous alcohol intake are at increased risk of general postoperative complications, prolonged hospital stay and admission to the intensive care unit compared to abstainers or low-risk drinkers (1). It has been estimated that the annual extra costs of alcohol-related complications in surgery is about €29 to 48 per capita in Denmark (2). No studies have previously investigated the cost and cost-effectiveness of alcohol cessation intervention in acute fracture surgery. This PhD thesis concerned a larger Scandinavian research project "Scand-Ankle". One of the aims of the project is to evaluate the effect of a new Gold Standard Programme for alcohol cessation intervention (GSP-A) for patients in acute fracture surgery regarding postoperative complications, alcohol intake and cost-effectiveness in a randomised design (RCT).

The thesis was based on three studies; a systematic review of the efficacy of disulfiram for patients with alcohol use disorders (3), an interview study on patient approaches to the GSP-A in relation to surgery (4) and a cost-effectiveness study of the GSP-A at the time of acute fracture surgery (5).

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The PHD is published as a supplement to the journal and will be available for download at www.clinhp.org

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Clin Health Promot 2014; 4:30

Eleven RCTs were included in the systematic review with a total of 1,527 patients. Most studies showed that supervised disulfiram had a significant effect on short-term abstinence, whereas the long-term effect on abstinence was unknown. The results suggested a need for more homogenous and high-quality studies regarding the efficacy of disulfiram.

The interview study was conducted prior to the RCT and included patients with a hazardous alcohol intake undergoing fracture surgery. The study clarified that all patients found alcohol cessation intervention relevant in relation to surgery, and about half of the patients were ready or partly ready to participate in the GSP-A. Findings from review and interview study - and existing evidence from GSP for smoking cessation intervention (6;7), - were used to describe the 6-week GSP-A; a structured education programme with weekly visits supported by disulfiram, B vitamins and alcohol withdrawal prophylaxis.

The GSP-A has been showed to increase the number of abstainers in the 6-week perioperative period (8) . The health economic evaluation was based on the first 46 randomised ankle fracture patients from two university hospitals in Copenhagen, Denmark. The analysis included both direct and indirect costs in the 6- week perioperative period, and the results showed that the GSP-A was less expensive than treatment as usual, but the difference was not significant. The difference was mainly due to lower hospital costs in the GSP-A group. Thus, adding the comprehensive GSP-A to the patient pathway in acute fracture surgery did not increase the total perioperative costs in the intervention group compared with treatment as usual.

Future data collection in the Scand-Ankle study will conclude on the cost- effectiveness of the GSP-A on postoperative complications, alcohol intake on long-term as well as health-related quality of life.

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News from the International HPH Network

Team-up for Clinical Health Promotion - beneficial and rewarding networking

All professionals working with Clinical Health Promotion should look into using the umbrella of the International Network of Health Promoting Hospitals & Health Services, so they don't have to stand alone and invent the projects from scratch, implement the ideas and convince their managers. But how to use the HPH Network in a meaningful way and how to find the right partners and collaborators?

By Jeff Kirk Svane, Technical Officer in the International HPH Secretariat

About the The HPH Network

The International Network of Health Promoting Hospitals & Health Services is a "network of networks". In total, it consists of more than 30 National/Regional HPH Networks, collaborating to reorient health care towards active promotion of health.

Each of the National/Regional HPH Networks consist of a minimum of 3 hospital and health service members. Furthermore, more than 60 hospitals and health services are individual HPH members of the International Network, since they are located in places yet without a National/Regional Network.

Get further information about the HPH Network at: www.hphnet.org

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Professionals working with Health Promotion in hospitals are entrepreneurs. We get things going, start up projects and create work and activity that puts things into motion in many places – changing the ways our organisations do business and reaching much further than our own departments. We just rarely see ourselves this way. After all, we are just doing our jobs and taking care of the patients as well and as whole-heartedly as we can, right? Sometimes, it works well and sometimes it works less well, but it works.

But what if you want it to work well all the time? One way to make this reality is to team-up and collaborate with other HP professionals in a network – and here we are lucky, since such a network already exists - The International Network of Health Promoting Hospitals (the HPH Network).

The raison d'etre of HPH has been formulated in a common agreement on a certain basis-level standard for Health Promotion – practically formulated in the official WHO HPH Standards. A network is defined as a relation between different persons. It can be a social relation like family, interest-based like sports or cultural, a professional relation with colleagues, a more random relation with travel mates, or a combination of these types.

As a member of the International HPH Network you are automatically part of a closely-knit network – and one that is pre-dominantly based on professional interest and work. Whether it be local, national or international, HPH lets you take part in lots of activities which practically cover the entire spectrum of important issues: getting inspired and learning more about Health Promotion, visiting and sharing knowledge with others that have something to show, convincing managers, obtaining funds, designing and implementing Health Promoting projects, publishing and disseminating results and knowledge, and much more.

The International HPH Network builds on discussions and collaboration from international colleagues with different approaches to and ideas of Health Promotion.

In common for all these activities are that you can commit as much as you like, and that you can pick and choose activities fitting your interests and needs: the activities are not mandatory and you can take part to a degree that fits you, and you can do so when it suits you.

This article however is about turning up the commitment dial on your involvement in the HPH Network.

The HPH Network (both internationally and locally) is a network of professionals with a common interest in Health Promotion and with a common ambition to optimize the efforts and the uptake within their organisation.

Like all other entrepreneurs, you are probably great at networking on the non-committed level already, and you undoubtly have a well-functioning network of colleagues and co-workers. Most likely, you take part in meetings, conferences and other events in your local setting that is related to Health Promotion. But if you want to do even more with your Health Promotion and the actual implementation of it, you should consider making better use of the benefits and tools that a more formal and committed network, such as the HPH Network has to offer.

This is how the HPH Network works

In a well-functioning network, people move away from "me-thinking" and begin "we-thinking". Network members exchange information, share knowledge, pass on know-how, and in some ways they also take on risk and cost as a team, rather than by themselves. Like with a baseball team, each win is a result of a group-effort – and each defeat is on all of us. It makes sense to share both victories and defeats – and more often than not, you'll find that whatever obstacles you face in your Health Promoting work has been faced before somewhere else, and whichever success you have had, will be of as much use to someone else as it has been to you.

The competencies of each individual member hospital and the persons that represent it, can benefit and be used by other members, because each organisation and each person contributes what they have to offer – and we all have different skills, resources, professional backgrounds and knowledge. This is, for some reason, abundantly true for Health Promotion since it seems there is no "typical professional route to Health Promotion" and active HPH professionals tend to come from a multitude of different job-functions and professions. As a result, the combined pool of knowing and doing is hugely beneficial to have at disposal of each member, which is the case in the HPH Network.

Once an HPH member, it is of course also possible to personalize your involvement and its content – to make your network more specific. After all, judging from the many takes on HP that exists, we as professionals have a tendency to have as many opinions as we are people. For that reason, it can be beneficial to focus on topics that are especially relevant to your exact work - such as how to do research in Health Promotion, how best to implement Health Promoting activities, how to do physical activity interventions in hospitals, etc. Or you could tweak your involvement towards a very goal-oriented purpose, sharing the responsibilities related to a given Health Promotion activity or project – such as running a scientific project, supplementing each other's portfolios with new ideas, helping each other with abstract writing and reviewing, writing articles together etc.

In November 2011, the Korean HPH Network arranged a baseball tournament for health profesional in Andong City, Korea. The one day event presented the opportunity for Korean health professionals to gain insight in the area of Health Promotion and to network with coleagues and others.

Things to consider before you join

First and foremost, you need to be clear on the purpose at hand. What are your goals related to joining the network? To get that sorted, you can start with a simple "who-what-why".

Who are you looking for in terms of collaborators? Are they national or international, practitioners, policy makers or a certain profession, etc?

What does joining the network entail in regard of benefits and commitments? Be sure you read what you commit to, and consider whether you are ready and able to deliver on the commitments you sign up for in the HPH Letter of Intent – this of course also includes paying the member fee.

Why do we do it? What is the purpose of joining? It could often be about implementing Health Promotion and you would do well to articulate your "why" in a sentence at the very onset - e.g. "we want to ensure that Health Promotion is implemented in our hospital to the benefit of patients, staff and community."

Next, and maybe after you join, you would probably need to begin defining the above in more detail – what is, for instance, the minimum level of implementation needed for you (and your colleagues and managers) to consider the improvement in HP activities and the HPH membership as such a success and a good investment of time and resources?

You should also start gearing up for the practical work – such as by finding out who will coordinate Health Promotion in your hospital and setting up a multidisciplinary steering committee for Health Promotion to help that person (read the WHO HPH Standards for details on what is good to measure and how to set up HPH in a hospital).

This is how you join the HPH Network and start reaping the benefits

All types of hospitals and health services, anywhere in the world, can join HPH. The only requirement is that your organisation actively sees patients.

To join HPH, simply fill out the HPH Letter of Intent and submit to the International HPH Secretariat at info@hphnet.org.

If you are in an area that has a National/Regional HPH Network, you can send the letter directly to the National /Regional Coordinator. Check if you have a National/ Regional Network and find the contact information you need here: http://www.hphnet.org/members/nr-networks.

Once the HPH Secretariat has your Letter of Intent in hand, we will process the application and commence the ratification process. An invoice for the annual HPH member fee will be issued to you – the current rate is 250 Euro per hospital per year – and once this is paid; your membership certificate will be issued. There are reduced fee for members from lower income and developing countries. Please visit the HPH website for more information.

This is how you keep the momentum

We are all different in terms of interest and opinion, disposition and collaborating skills. That is why the following 10 advice of networking are good to follow. They may be common sense to a certain degree, but they will help you get the most out of your HPH membership:

- Use the reciprocity principle: contribute first
- Be present and attentive
- Be precise and interesting
- Be honest and diplomatic
- Ask for help
- Follow up and remember to say thanks
- Train your people-skills
- Be patient and think long-term
- Be a bridge-builder and create contact
- Take initiative – it is okay to challenge yourself

You can also contact the International HPH Secretariat for more support regarding how to get involved in HPH, becoming a member, fully utilise the network etc.

Among other things, the membership also carries with it benefits such as:

- Use of the HPH emblem on publications and electronic material
- Reduced conference fees at HPH Confrences
- Easy access to combined Health Promotion knowledge, know-how, strategies, methods of more than 900 hospitals and health services working in the field
- Invitations to join research projects – often a way to fast-track your hospital's becoming truly health promoting - and at the same time access to a network of possible partners for research you want to do
- Access to professional development, teaching and training in Health Promotion topics – such as in WHO HPH Schools
- Invitations to join international task forces and working groups (and the possibility to initiate such groups)
- Technical and strategic support from the International Secretariat. If applicable, support from national/ regional coordinating institution
- A hospital profile on the International HPH website, free copies of the Clinical Journal of Health Promotion and the HPH newsletter
- Tools for Health Promotion work and support for how to successfully use them - such as the WHO HPH Standards, HPH models, guide for healthy workplace, SEMT on children's rights in hospital, standards for equity in health etc.
- Energy, direction, support and inspiration – crucial to the success of your Health Promotion work

Affiliated membership

If your organization does not see patients and is thus not eligible for normal HPH membership, but has a supportive role (such as a university, a health IT company or so on) you can apply for Affiliate HPH Membership, if you fulfil the ethical criteria. Read more about Affiliate Membership and become a member under this scheme here: http://www.hphnet.org/members/affiliatedmembers

Welcome to the HPH Team.

News from the International HPH Network

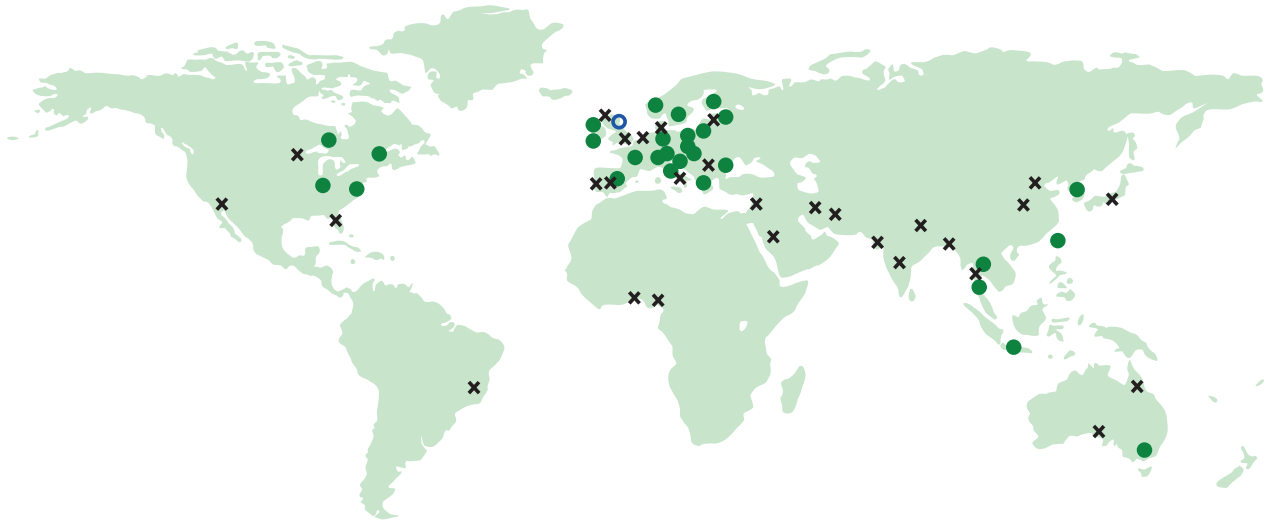
The first members from Pakistan & Ghana have joined the HPH Network

The International HPH Network continues expanding world wide, and it is with great pleassure that we welcome our two newest HPH members: New World Hope Organisation from Pakistan & Municipal Health Directorate from Ghana.

New World Hope Organization provides health care to rural and low income areas by raising awareness, capacity building and service delivery. New World Hope Organisation is running a total of 12 hospitalts, clinics and health centres in Pakistan, and they offer a variety of health care and nutrition programs to their patients. They also do comunity work; including renovating and building, equipping and running health care hospitals and health care centres, training midwives and traditional birth attendants along with providing medication, health and hygiene training. We wish to welcome New World Hope Organisation welcome in the International HPH Network.

We also wish to welcome the Municipal Health Directorate, Tetrem Hospital, as the first Ghanesian member of the International HPH Network. The Municipal Health Directorate is only the second HPH member in Africa, and the International HPH Network hopes to gain wider representation in the continent in the nearest future.

Map of the worldwide representation of HPH member Hospitals and Health Services by end of March 2014



● = Country / Region with HPH Network(s)

× = Country / Region with individual Hospital or Health Service HPH Member(s)

○ = Affiliated Member(s)

The International HPH Network has members in all six continents and in a total of 42 countries. The HPH Network was initiated in Europe in the 1990'ties and has since then experienced a great expansion, especially in North America, Asia and Australia. In the last two years, members in Afrika and Brazil have also joined the HPH Network.

News from the International HPH Network

Legacy statement from the chair of the HPH Governance Board, Dr. Shu-Ti Chiou

After having served for four years as an elected member, with the last two years as the Chair of the HPH Governance Board, we now sadly say good bye to Dr. Shu-Ti Chiou, the Coordinator and founder of the Taiwanese HPH Network.

Dr. Chiou has been a very active and influencial contributor to the International HPH Network, where she among many other things has been a strong force in the HPH, most notably in Asia. Dr. Chiou has been key to many initiatives and projects, and the HPH Network wishes to thank and acknowledge her for all her work and excellent leadership. Below, we present Dr. Chiou's Legacy Statement.

Dear friends and colleagues

I would like to thank the network members for the support and opportunity granted to me to serve the International HPH Network as Chair of the Governance Board. It has been a wonderful experience working with all the outstanding and devoted GB members, WHO-CCs and the secretariat. Thank you all!

I joined the GB first as an observer in 2008, and then was elected to be the Vice Chair in 2010. I have been actively participating in several task forces, working groups and various network duties, including the Editorial Board of Clinical Health Promotion, the TFU Task Force, Task Force for HPH & Environment, Task Force for HPH & Age-friendly Health Care, Scientific Committee for the HPH Conference, a working group on WHO-HPH standards, a working group on healthy workplace, etc. The process of working with you was fruitful and inspiring!

During my two-year term as the GB Chair from 2012 to 2014, I deeply appreciated your efforts to promote the growth of our international network to over 1,000 members across 5 continents. The expansions in Eastern Europe and in Asia were most remarkable. I'm also happy to see Taiwan's growth to more than 130 members during this period. It has also been a privilege for me to sign several important MoUs on behalf of HPH, such as the MoU with the Global Network for Tobacco Free Health Care Services signed in 2012 and the MoU with the International Hospital Federation signed in 2013. It is unforgettable to see that every GB member has been taking at least 1 or 2 portfolios and has worked so hard to carry out all GB strategies very well. The secretariat also did very well in supporting the work of the HPH Governance Board and General Assembly. You are marvelous!

As the Director-General of Taiwan's Health Promotion Administration, I had the opportunity to give speeches in various international conferences, and I often talked about partnership between public health and health care or other HPH-related issues. I hope this helped to raise the visibility of the HPH Network to some extent. These events included the 2012 annual assembly of the US Association of State and Territorial Health Officials, the 38th IHF World Congress in Oslo 2013, the 20th World Congress of Gerontology and Geriatrics in Korea 2013, European Health Forum Gastein 2010-2013, APHA 2011, Global Health Forum 2013 in Taiwan, the 2013 McKinsey LSN Conference in London, etc.

Last year, I had the honor of being elected Global Vice President for Partnerships of the International Union for Health Promotion and Education (IUHPE) with a 3-year term. I will continue to advocate for HPH through the IUHPE platform and its events.

I am grateful to see the collaboration between us. I'm confident that the network will continue to develop and expand under the leadership of the new chair. And, no doubt about it, Taiwan HPH Network will also continue to actively participate with you and promote the Global strategies of the International HPH Network.

Dr. Shu-Ti Chiou
Chair Governance Board
The International HPH Network
April 2012 - April 2014

Follow the HPH Network on Social Media – join the global LinkedIn Group

With more than 800 members, the global HPH LinkedIn profile is active and is filled with interesting and useful discussions for everyone interested in health promotion and the HPH Network.

As the use of Social Media is heavily increasing, the HPH Network has followed the trend and is now very active via the LinkedIn group: Health Promoting Hospitals & Health Services - Global.

The group is administrated by Sally Fawkes, Coordinator for the Victorian HPH Network in Australia and member of the HPH Governance Board. Sally has been very active in the advancement of the HPH Network on the Social Media. The HPH Group on LinkedIn is a dynamic forum for lively discussions and a way to share views and ideas of interest for the members. The LinkedIn group also offers the opportunity to establish new contacts with other interested in Health Promotion.

Amongst the many interesting discussions at the LinkedIn group we can mention: Effective governance structure; Clinical tool for addressing poverty; Supporting patients to be smoke-free; Promoting Health equity – what can systemmes and government policy do?

Join the LinkedIn group and express your views and input in the many discussions.

International Network of
Health
Promoting
Hospitals & Health Services

HPH Material in local language needed

Among the recent developments of the HPHNET.ORG website, the HPH secretariat have added Google Translate, so that visitors can have the website displayed in 50+ languages. Following this improvement, the secretariat wants to update the website with local language HPH materials.

This is why we kindly ask the National/Regional HPH Coordinators, to please send us any HPH material that has been translated into your local language. We will then upload the material to the website, in order to support the existing and future members in your regions even better.

Please send any translated HPH materials you have on file to info@hphnet.org

News from SEEHN

Health for Jobs and Prosperity in South East Europe

The South-eastern European Health Network is preparing itself for implementing the SEE 2020 Strategy in 2014-2019.

About SEEHN

The South-eastern European Health Network (SEEHN) is a governmental sub-regional cooperation established in 2001. SEEHN consists of ten countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, State of Israel, Republic of Macedonia, Republic of Moldova, Montenegro, Romania, and Republic of Serbia.

WHO, Regional Office for Europe is one of SEEHN's founders and has supported the SEEHN from its establishment.

For more information: www.moh.gov.mk

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On November 21th, 2013 in Sarajevo, Bosnia Herzegovina the Ministers of Economy of the countries in South East Europe (SEE) endorsed the SEE 2020 Strategy "Jobs and Prosperity in a European Perspective" (SEE2020). The strategy "reflects the determination of all the governments in South East Europe to embrace the bold policy approaches required to attain the levels of socioeconomic growth necessary to improve the prosperity of all its citizens and to facilitate eventual integration with the EU".

For the first time in history, health became an integral part of the SEE2020 as evidence has showed a new paradigm in the last decades, that health is a contributor to economic growth and prosperity rather than only a spending.

Implementation of SEE2020

The SEE2020 Strategy's implementation will be launched in 2014. The Regional Cooperation Council (RCC) will support the SEE2020's implementation through:

- Providing support to the individual countries to develop their National 2020 Strategies whereby the Ministries of Economy will be the leading governmental sector at national levels;
- Providing support to the regional multisectoral initiatives that are to be implemented by the over 60 SEE Regional Initiatives;
- Establishing the system and indicators for monitoring and evaluation of SEE2020 implementation both at national and regional levels;
- Developing and implementing six horizontal multi-sectoral regional initiatives in support of the national actions.

This process will have serious implications for the SEE Health Network in consideration of its immediate follow-up actions.

4th Coordinating meeting

In view of the above, the RCC kindly organised the 4th Coordination Meeting of the SEEHN held in Jahorina, Bosnia and Herzegovina on March 12th - 13th.

At the meeting the SEEHN obligations and actions for the implementation of SEE2020 was discussed and agreed,

Representatives from all ten SEEHN member countries met in Jahorina to discuss the impact of health on the region's overall economic growth and prosperity. This was the first time, that health was included as an integrated part of the overall economic strategy.

including: (i) monitoring of SEE 2020; special attention was paid to the proposed measurable indicators for the various dimensions covered by the strategy such as Free Trade Area, Competitive Economic Environment, Education, Digital Society, Energy, Transport, Environment, Employment, Health and others; the health targets and indicators were restructured to fully encompass prevention and health promotion within the overall concept of "health in all policies"; social deter-

minants of health and inequalities. (ii) implementing SEE2020 through flagship initiatives, including the first ideas for health related flagship initiatives; (iii) governing the implementation process at the strategy, pillar and dimension level, sustainability of institutions involved, budgeting the regional actions, and finally, (iv) the work plan (2014 – 2019) of the health dimension objectives and measures under the Inclusive Growth pillar of the SEE2020.

A revised set of indicators was agreed upon and is presented in Table 1. The development of qualitative indicators and flagship initiatives will follow in the coming months, linking as far as possible health with employment, education and all other relevant sectors and regional initiatives as needed.

This report was assembled by:

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Dr. Maria Ruseva, Co-opted Member, Executive Committee, SEE Health Network.

Table 1 Proposed outcome and policy quantitative health indicators of the SEE2020 Strategy /on March 19th 2014 after the SEEHN Meeting in Jahorina (1)

Sub-dimensions	Targets and Actions of SEE2020 relevant to Sub-dimensions	Policy Quantative indicators	Outcome Indicators
Universal Coverage	Corresponds to key strategy action(s): (ii) strengthen health institutions, coverage, and information infrastructure	• Health insurance coverage (% of population) WHO /HFA • Private household out of pocket payments as % of health expenditure WHO/HFA • Practising general practitioners per 1000 population • Practising nurses per 1000 population • Percentage of children vaccinated against measles (1 dose by second birthday), polio (3 doses by first birthday), rubella (1 dose by second birthday) • Sickness Absence Rates	• Continued increase in life expectancy at current rate, disaggregated by sex, as • % increase in healthy life years at age 65 • % reduction in low birth weight • Infant mortality per 1000 live births (HFA-DB) • Age-standardized overall premature mobility rate for four major non communicable diseases (HFA-MDB) - Cardiovascular diseases - Cancer - Diabetes mellitus - Chronic respiratory diseases
Health Governance and Resources	Corresponds to key strategy action(s): (i) Improve delivery of health promotion services (ii) strengthen health institutions, coverage, and information infrastructure (iv) strengthen human resources for health	• Total expenditure on health as % of GDP WHO-HFA • Total expenditure on health as absolute amount WHO-HFA • Public Sector Health Expenditure as % of all Government expenditure WHO-HFA • Health SMEs Desirable New • Number of Community Health Workers per 1000 population Desirable New • Number of outpatient visits	
Health Promotion and Disease Prevention	Corresponds to key strategy action(s): (i) Improve delivery of health promotion services (ii) strengthen health institutions, coverage, and information infrastructure	• Equity of access to health services as a measure of unmet needs • % reduction in age-standardized prevalence of tobacco use among children and persons aged > 15; % reduction in age-standardized per capita alcohol consumption among children and persons aged > 15; • % reduction in age-standardized per capita salt intake among persons aged > 18; % reduction in age-standardized prevalence of overweight and obesity in adolescents & persons aged > 18 • % Self-perceived limitations in daily activities • % of babies breast fed to 6 months	

(1) The Qualitative policy indicators will be developed in the coming months. The Quantitative indicators, presented in the table, are still preliminary and subject to final adjustment and approval.