



# Integration of health promotion in clinical hospital departments: standards fulfilment, documentation of needs and service delivery

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## Abstract

**Background** Integrating health promotion (HP) in clinical settings has tremendous effects on treatment outcomes, patient safety and expenses on short and long-term. WHO-HPH standards and models are used globally - but publications on compliance and provision of HP remain rare.

**Objective** To evaluate WHO-HPH Standards compliance, identification of HP needs and related HP deliveries at hospitals, as well as to identify important factors for high level of service deliveries to patients in need of HP.

**Methods** 21 clinical departments, each with 50 patient records, were included in Taiwan. Standards compliance was recorded. The 1050 medical records were audited for documentation of patients' HP need (HPH DATA model) and HP service deliveries (HPH Doc Act model) regarding malnutrition, overweight, physical inactivity, smoking and excessive drinking.

**Results** The Standards compliance was high; 93% (88-98%). Identification rate was 46% (32-72%) and delivery rate to those with identified HP needs was 33% (22-40%). Of the total deliveries, 17% (5-24%) were given to patients documented as not having HP needs, and 46% (41-59%) to patients without information on HP needs. Modifiable factors of significance for high level of HP service delivery were Standards compliance and HP needs identification; OR 1.89-3.75 and 1.74-12.66.

**Conclusion** The compliance was high at organisation level, but lower at patient level. Most deliveries were given to patients without identified needs. Future research should include implementation strategies reaching out to the patients.

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## Research and Best Practice

### Introduction

The burden of disease is closely related to smoking, alcohol, overweight and malnutrition as well as physical inactivity (1). In order to reduce this burden and increase public health, the focus worldwide is on the need for and access to health promotion (HP). In addition to the improved health long-term (2), more and more evidence exists on almost immediate beneficial effects of applying HP to clinical settings (3). It works by improving the direct clinical outcome, reducing expenses and increasing patient safety on very short term (4). Improvements to clinical results include faster recovery (5), better disease control (6-8), reduced surgical complications (9-11) and improved mental health (12). Therefore, HP should thus be considered a central issue in treatment quality (13-15). However, implementation of evidence-based HP in the clinical settings is still a challenge – in line with implementation of other evidence-based interventions.

To support and guide implementation of HP in clinical settings, the World Health Organization (WHO) and the International Network of Health Promoting Hospitals & Health Services (HPH) have developed and validated 5 standards with 40 measurable elements for HP in hospitals: I) management policy, II) patient assessment, III) patient information and intervention, IV) promoting a healthy workplace and V) continuity and co-operation (16;17). The International Society for Quality in Health Care criteria (18) were used for establishment of the Standards for HP in Hospitals. With the standards as a quality management tool, hospital organisations can monitor their HP implementation, including the structures that support the delivery of HP services (13).

To create the necessary in-detail framework for monitoring the implementation at individual patient level, two easy-to-use models for documentation of HP needs and related interventions in the medical records, have also been developed and validated internationally (19;20). These models monitor e.g. lack of physical activity and the following service deliveries, such as motivational counselling or participation in an exercise program. The HPH DATA and Doc-Act models monitor the documentation in the medical records of WHO-HPH Standard II and III.

HPH DATA model includes 9 questions for documenting individual patient needs for HP related to smoking, alcohol, overweight, malnutrition and physical inactivity (19). HPH Doc-Act model with 15 international codes documents HP activities provided to individual patients with HP needs (20). This model differentiates between brief intervention (BI), e.g. motivational counselling,

and HP intervention (INT) or rehabilitation programs.

Overall, the standards and models have been shown to be understandable, adequate and easily added to existing local procedures and systems (16-17, 19-20). They have been implemented to varying degrees by a large number of hospitals and health services worldwide - typically as an integrated element in the local and national quality management program. Still, however, publications on compliance with standards and HP service deliveries remain sparse (21;22).

The aim of the present study was to evaluate the compliance with the WHO-HPH Standards, the identification of needs and related service deliveries of HP activities in Taiwanese hospitals. A further aim was to identify important factors for high levels of HP service delivery.

### Methods

This study used a cross-sectional design. The English project materials were translated into local languages by the Taiwanese HPH Network, which also supported the study process. The Danish Data Protection Agency for international studies confirmed that the project included no personal identification data, since the data were collected anonymously at source. The Research Board of Bispebjerg & Frederiksberg Hospital and the local ethics boards approved the project before start (ClinicalTrials.gov id: NCT01563575. Danish Data protection Agency J.nr: 2012-41-0152).

### Participants and Setting

The inclusion criteria were departments responsible for patient treatment – both in- and out-patient clinics, and each hospital could only join with one department. Exclusion criteria were paediatric departments, palliative departments and nursing homes, owing to the fact that the standards and tools have not yet been validated for these patient groups.

Through an open call for participation 21 clinical departments from 21 different HPH hospitals in Taiwan were included in the study after informed consent from both the hospital management and the department management. There were 7 departments of internal or general medicine, 3 of rehabilitation, 2 of oncology, 2 of orthopaedics, 2 of endocrinology, 2 of surgery, 1 of geriatrics, 1 of psychiatry and 1 of cardiology. The departments represented accredited public, private, university, mid-sized and small rural hospitals (see Table 1 for characteristics).



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**Table 1** Characteristics of 21 hospital departments included

	Number of departments	
<b>Status of hospital:</b>	Public	7
	Private not for profit	13
	Private for profit	1
<b>Type of hospital:</b>	Community hospital	1
	Large teaching general	15
	University hospital	3
	Specialised hospital	2
<b>Catchment area:</b>	Rural	4
	Urban	14
	Mixed	3
<b>Number of beds:</b>	<200	2
	200 to 399	3
	400 to 599	3
	>599	13

### Collection of Data

The departments received a project manual and technical support. They collected data through the self-assessment manual-based tools over 6-8 months, all anonymised at source. The monitoring of the WHO-HPH Standards was done at department level by categorising the measurable elements as either “yes” or “no” regarding fulfilment.

For the HPH DATA and HPH Doc-Act models the local staff performed a manual-based audit. They audited 50 consecutive anonymised patient records at each hospital from a specific date before the inclusion date. For each item in the models, the staff would then mark it either:

- “Yes” if categorisable information was available in the record, sufficient to determine a need for HP or a delivered service.
- “No” if categorisable information was available in the medical record, sufficient to determine no need for HP or no service had been delivered.
- “Unknown”: if information was not categorisable, such as lacking or insufficient to determine need for HP or whether a service had been delivered or not.

### Analyses

The outcomes were fulfilment of the 40 measurable elements of the 5 WHO-HPH Standards; the patients identified with or without need for HP (smoking, alcohol, overweight, malnutrition and physical inactivity) as well as patients with said needs, who actually had related HP service deliveries.

The association between need for a specific HP service and the related delivery was calculated as univariate analyses controlled for confounders and effect modifiers and presented as odds ratio (OR) with 95% confidence interval (CI). This was followed by a final multivariate regression analysis. The results were considered significant if CI did not include the value 1.

### Results

The hospital departments had a very high compliance with the 40 measurable elements constituting the 5 WHO-HPH standards; Standard I with 96%, II with 88%, III with 91%, IV with 93% and V with 98%. Overall, 15 of the 21 departments had 100% compliance; median value 40, ranging 20-40 (see Table 2).

Alltogether, data from 21 x 50 = 1050 medical records were analysed. The departments had a low level of documentation of needs or no needs for HP regarding malnutrition, overweight and physical inactivity (see table 3).

### Relation between identified HP needs and service delivery

The association between needs for specific HP and related deliveries, for instance daily smoking and related delivery of smoking cessation intervention, was low (Table 4). The majority (68%) of those with identified needs for HP did not receive a related intervention. Interestingly, 17% in median (ranging 5-24%) of those identified as having no risk factors were given HP services. For all risk factors the highest absolute number of HP activities was delivered to patients with unknown and insufficient information about the related risk factor.

Overall, the multivariate analysis of important factors for HP deliveries of specific life-style factor interventions showed that identification of the risk factors, (except for malnutrition) and complete standard compliance were significantly associated with increased deliveries. Being a public hospital was associated with significantly lower delivery of interventions for all lifestyle interventions (table 5). HP activities targeting nutrition problems were associated with urban hospitals and hospitals with a mixed urban/rural catchment area. Intervention against physical inactivity was negatively associated with being a smaller size hospital and having an urban or mixed urban/rural catchment area, but positively associated with medical and psychiatric departments. On the other hand smaller size hospitals were significantly associated with both alcohol and smoking interventions. There was no difference between community hospitals and larger teaching/university hospitals concerning the HP deliveries.



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**Table 2** Compliance with the WHO-HPH Standards for HP in hospitals, measured by 21 clinical departments in Taiwan

Standards/Substandards	Departments 1 - 21																				Total	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T		U
1.1.1. Aims and mission include HP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
1.1.2. Minutes reaffirm agreement w HPH	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
1.1.3. Quality/business plans include HP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
1.1.4. Personnel and functions ID'ed for HP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
1.2.1. There is a budget for HP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
1.2.2. HP procedures available	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	19
1.2.3. HP structures and facilities can be ID'ed	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
1.3.1. HP intervention data captured	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
1.3.2. Assessment of HP established	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
<b>Total Standard 1: Management Policy</b>																					<b>96%</b>	
2.1.1. Guidelines to ID lifestyle risk exist	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
2.1.2. Guidelines have been revised	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	18
2.1.3. Guidelines to ID HP needs exist	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	16
2.2.1. Assessment is documented	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
2.2.2. Guidelines for reassessing HP needs	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	17
2.3.1. Info from referring DR available in MR	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
2.3.2. MR documents social/cultural background	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	18
<b>Total Standard 2: Patient Assessment</b>																					<b>88%</b>	
3.1.1. Information given is recorded in MR	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	18
3.1.2. HP activities are documented in MR	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	18
3.1.3. PT satisfaction assessment integrated in QM	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	18
3.2.1. General health information is available	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
3.2.2. Info about highrisk diseases is available	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
3.2.3. Information on PT organizations available	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
<b>Total Standard 3: Patient Information &amp; Intervention</b>																					<b>91%</b>	
4.1.1. Working conditions comply w N/R directives	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
4.1.2. Staff comply w health and safety	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
4.2.1. Intro training on HP policy given to new staff	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
4.2.2. Staff aware of HP policy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
4.2.3. HP performance appraisal system exists	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	17
4.2.4. Practices made by multidisciplinary teams	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
4.2.5. Staff involved in policy-making	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	19
4.3.1. Policies on health issues available for staff	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
4.3.2. Smoking cessation programmes offered	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	17
4.3.3. Annual staff surveys are carried out	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	19
<b>Total Standard 4: Healthy Workplace</b>																					<b>93%</b>	
5.1.1. Regional policy taken into account	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
5.1.2. List of partners available	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
5.1.3. Collaboration based on regional health plan	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
5.1.4. Plan for collaboration w partners available	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
5.2.1. Follow-up instructions given	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
5.2.2. Procedure for info exchange exists	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
5.2.3. Receiving organization gets info on PT	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	21
5.2.4. Rehab plan documented in MR	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	20
<b>Total Standard 5: Continuity and Cooperation</b>																					<b>98%</b>	
<b>Total Number of measurable elements (of 40)</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>39</b>	<b>38</b>	<b>35</b>	<b>31</b>	<b>24</b>	<b>20</b>
<b>Total All standards</b>																					<b>94%</b>	



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**Table 3** HPH DATA Model for assessing HP needs: The medical record audit results for the documentation of HP needs among 1050 patients

	Categorisable (%)		Not categorisable (%)
	"Yes" to HP needs (high risk)	"No" to HP needs (low risk)	Unknown
<b>A - Is the patient at risk of illness-related malnutrition?</b>	<b>26</b>	<b>20</b>	<b>54</b>
A-1 Is the patient's BMI below 20.5?	12	51	37
A-2 Has the patient lost weight in the past three months?	6	55	39
A-3 Has the patient had reduced appetite in the past week?	6	62	31
A-4 Is the patient severely ill? (i.e., stress-metabolic)	11	60	29
<b>B - Is the patient overweight?</b>	<b>22</b>	<b>10</b>	<b>68</b>
B-1 Is the patient's BMI above 25?	20	42	38
B-2 Has the patient's waist exceeded 80 cm (W) or 94 cm (M)?	5	20	75
<b>C - Is the patient active less than 30 min/day?</b> (Defined by moderate intensity with pulse increase, e.g., walking, cycling, training)	<b>13</b>	<b>21</b>	<b>66</b>
<b>D - Does the patient smoke daily?</b>	<b>16</b>	<b>56</b>	<b>28</b>
<b>E - Does the patient's drinking exceed the recommend limits?</b> (Defined as 7 drinks weekly for W and 14 for M)	<b>7</b>	<b>62</b>	<b>31</b>

(W: women; M: men)

**Table 4** Distribution of the specific identified risk factors compared to the distribution of related intervention; brief intervention (BI) more intensive intervention (INT).

Risk Factor	Identification of risk factor		Related BI/INT	p-value
	n (%)	n (%)		
<b>Malnutrition</b>				
Risk	275 (26)	72 (30)		0.133
No Risk	212 (10)	58 (24)		0.083
Unknown Risk	563 (54)	110 (46)		<b>0.006*</b>
Total	1050 (100)	240 (100)		-
<b>Overweight</b>				
Risk	232 (22)	83 (34)		<b>0.000*</b>
No Risk	101 (10)	16 (7)		0.082
Unknown Risk	717 (68)	141 (59)		<b>0.000*</b>
Total	1050 (100)	240 (100)		-
<b>Physical Inactivity</b>				
Risk	132 (13)	68 (40)		<b>0.000*</b>
No Risk	171 (16)	32 (19)		0.364
Unknown Risk	747 (71)	70 (41)		<b>0.000*</b>
Total	1050 (100)	170 (100)		-
<b>Smoking</b>				
Risk	172 (16)	50 (37)		<b>0.000*</b>
No Risk	557 (53)	22 (17)		<b>0.000*</b>
Unknown Risk	321 (31)	62 (46)		<b>0.000*</b>
Total	1050 (100)	134 (100)		-
<b>Excessive Alcohol</b>				
Risk	72 (7)	12 (22)		<b>0.000*</b>
No Risk	602 (57)	3 (5)		<b>0.000*</b>
Unknown Risk	376 (36)	39 (53)		<b>0.000*</b>
Total	1050 (100)	54 (100)		-

\* Statistically significant (P<0.05)

## Discussion

We found that the present hospital departments from Taiwan fulfilled the WHO-HPH Standards almost completely and to a significantly higher degree than reported in previous studies (16;17;21;27). This very high compliance at organisational level was not followed by a correspondingly high degree of implementation at patient level. Overall, about half of the patients had their needs for HP evaluated and documented in the medical record, while the required HP services were delivered to less than one third of those patients identified with HP needs. These results are not quite different from other publications (19;20;22;23).

Another part of the results in the present study are the factors of significance for a high level of delivery in Taiwan. Both complete fulfilment of the WHO-HPH standards and having identified the risk factors were significant for delivery of all the related HP services. This is important, because these two factors can be modified relatively easy. Other significant factors, albeit not so changeable, are hospital size, urban catchment area and being a public hospital - amongst others. Furthermore, the university and teaching hospitals did not have higher delivery rates. Especially, the modifiable factors should be included in the future considerations of better implementation of HP targeting patients.

In principle, HP should ideally take place outside hospitals, such as in families, institutions, work places, schools and primary care. However, when entering hospitals about 80-90% of patients have at least one risk





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**Table 5** Multivariate analyses on assoc. between HP deliveries and characteristics; OR: odds ratio; CI: 95% confidence interval; MN: malnutrition; OW: overweight

		Nutrition		Physical Inactivity		Smoking		Alcohol	
		OR	(CI)	OR	(CI)	OR	(CI)	OR	(CI)
Identified Risk vs No & Unknown Risk	MN:	0.98	(0.68 - 1.42)	<b>8.15*</b>	(4.96 - 13.39)	<b>4.22*</b>	(2.65 - 6.71)	<b>12.66*</b>	(3.91 - 40.98)
	OW:	<b>1.74*</b>	(1.22 - 2.49)						
Complete vs Incomplete Standard Compliance		<b>1.89*</b>	(1.23 - 2.93)	<b>3.75*</b>	(2.15 - 6.52)	<b>3.66*</b>	(1.76 - 7.61)	<b>2.24*</b>	(0.43 - 11.58)
Public vs Private Hospitals		<b>0.25*</b>	(0.16 - 0.38)	<b>0.61*</b>	(0.38 - 0.99)	<b>0.19*</b>	(0.10 - 0.34)	<b>0.22*</b>	(0.07 - 0.65)
Community vs teaching & University Hospitals		0.98	(0.16 - 6.19)	1.00	-	1.00	-	1.00	-
Urban & Mixed vs Rural Catchment		<b>16.66*</b>	(3.88 - 71.54)	<b>0.16*</b>	(0.06 - 0.45)	1.43	(0.53 - 3.89)	6.77	(0.51 - 90.78)
< 599 Beds vs > 600 Beds		1.15	(0.79 - 1.66)	<b>0.17*</b>	(0.10 - 0.30)	<b>2.14*</b>	(1.38 - 3.31)	<b>31.40*</b>	(10.51 - 93.78)
Med & Psych vs Surgical Department		1.80	(1.00 - 3.23)	<b>17.63*</b>	(5.53 - 56.17)	2.27	(0.92 - 5.59)	1.00	-

\* Statistically significant (P<0.05)

factor, like smoking, excessive alcohol drinking, risk of malnutrition, overweight and physical inactivity, all of which can significantly reduce treatment outcome on short term and health gain on longer term (19-23). Nevertheless, it is possible to improve immediate outcome by adding HP services to patient pathways in surgery, internal medicine and psychiatry (4-12). A first significant step for this is to identify patients' needs for HP services.

From this study, it appears that such systematic recording of needs for HP is a key prerequisite to also delivering associated HP services systematically. Knowing the beneficial effect on treatment outcome on short term as well as the benefit on longer term (1-3), many hospitals and health services worldwide have adopted the tools assessed in this study to varying degrees (e.g. Denmark, Sweden, Ireland, Canada etc.). However, in order to harvest the benefits of outcome- and cost-effectiveness it is necessary to systematically implement effective HP services, and our study clearly showed the need for improved implementation at patient level. The focus should be on those in need of HP services. From the present study it seems that the highest numbers of activities were actually given to patients documented to either be without risk or without information on risk. Health policies, reimbursement strategies and agreements on specific standards and clinical guidelines are highly relevant, but seldom sufficient to secure implementation at patient level (24-25) and as a result the clinical implementation of evidence is often years delayed.

In addition to facilitating the implementation process with teaching and training of staff to be able to handle the new activities, also staff and managerial attitudes (27;28) and individual lifestyle are surprisingly important for successful implementation of HP (28). Interestingly, the patients are positive towards new interventions, and especially positive to being offered HP services

as an integrated part of patient pathways (29-32).

### *Bias and Limitations*

Some bias and limitations apply to the present study. On one hand, the HP Services have been delivered by different staff groups across the hospitals, which may increase the variety. On the other hand, HPH members in Taiwan are evaluated by the WHO-HPH Standards when joining HPH as part of their local membership criteria. Overall, the data were collected by self-assessment, which may overestimate the compliance and deliveries. Another bias could arise from updates to the Standards over time (13). The present study used the latest edition. Further bias on the Standard compliance might originate from the settings, because the standards were developed for entire hospitals as organizations and this study included just singular clinical departments. It could be argued that it is more difficult to get an entire hospital to comply with a set of standards, than it is to get just a single department to comply. In practice, however, many of the topics dealt with by the standards are naturally applied to the whole hospital organization – especially for issues like overall policy, healthy work places, teaching and training of staff, common guidelines, general processes etc.

It is a strength that the study was performed under real life conditions; however, all participating hospitals were HPH members, which may limit the generalisation outside HPH and Internationally.

### *Perspectives*

The perspectives of monitoring and improving the implementation and deliveries of HP in clinical settings are tremendous for the patient and society at large. They include better treatment results and increased health gain. From a clinical perspective, it is necessary to secure teaching and training regarding HP for staff and management in addition to offering the HP programs to support and fa-



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cilitate meeting the patients' needs for HP. Finally, the present study underlines the need for additional research on the topic of clinical HP implementation and related strategies in high quality designs.

### Conclusion

WHO-HPH Standards are complied with to a high degree in the present study, but the identification of HP needs and related HP delivered to patients are lower. Important factors of high delivery levels the fulfilment of the WHO-HPH Standards and identification of risk. Additionally, about 17% of patients without HP needs and 46% of patients with no documented risk still received HP services. Development of effective implementation strategies, reaching out to patients, and evaluation in randomised trials are urgently required.

### Contribution Details

Conception and design: JKS, HT, STC

Acquisition of data: STC, YLC, SHS, CHH, CYP, MNL, YHS, TW, SCW, TTC, LYH, YYK, CJW, RYY, HIY, YHC, MSC, HTC, YLC, DP, NPW, TCT, HCW

Analysis and interpretation of data: JKS, HT

Drafting manuscript: JKS, HT

Revising manuscript: STC, YLC, SHS, CHH, CYP, MNL, YHS, TW, SCW, TTC, LYH, YYK, CJW, RYY, HIY, YHC, MSC, HTC, YLC, DP, NPW, TCT, HCW

### Competing Interests

None declared.

### References

- (1) GBD 2013 Mortality and Causes of Death Collaborators. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015; 385:117-71
- (2) Li G, Zhang P, Wang J, Gregg EW, Yang W, Gong Q, Li H, Li H, Jiang Y, An Y, Shuai Y, Zhang B, Zhang J, Thompson TJ, Gerzoff RB, Roglic G, Hu Y, Bennett PH. The long-term effect of lifestyle interventions to prevent diabetes in the China Da Qing Diabetes Prevention Study: a 20-year follow-up study. *Lancet* 2008; 371:1783 - 9.
- (3) Groene O, Jorgensen SJ. Health promotion in hospitals - a strategy to improve quality in health care. *The Eur J of Pub Health* 2005; 15:6-8.
- (4) Pedersen B, Hansen PE, Tønnesen H. Scand-Ankle: Cost-effectiveness of Alcohol Cessation Intervention in Acute Fracture Surgery. *Clin Health Promot* 2014; 2 suppl: 1-68.
- (5) Nielsen PR, Jørgensen LD, Dahl B, Pedersen T, Tønnesen H. Prehabilitation and early rehabilitation after spinal surgery: randomized clinical trial. *Clin Rehabil* 2010; 24: 137-48.
- (6) Gæde P, Lund-Andersen H, Parving HH, Pedersen O. Effect of a multifactorial intervention on mortality in type 2 diabetes. *N Engl J Med* 2008; 358:580-91.
- (7) Anderson L, Taylor RS. Cardiac rehabilitation for people with heart disease: an overview of Cochrane systematic reviews. *Cochrane Database Syst Rev* 2014 Dec 12; 12: CD011273.
- (8) Nikitovic M, Brenner S. Health technologies for the improvement of chronic disease management: a review of the Medical Advisory Secretariat evidence-based analyses between 2006 and 2011. *Ont Health Technol Assess Ser* 2013; 13:1-87
- (9) Thomsen T, Villebro N, Møller AM. Interventions for preoperative smoking cessation. *Cochrane Database Syst Rev* 2014 Mar 27; 3:CD002294.
- (10) Oppedal K, Møller AM, Pedersen B, Tønnesen H. Preoperative alcohol cessation prior to elective surgery. *Cochrane Database Syst Rev* 2012; 7:CD008343.
- (11) Nasell H, Adami J, Samnegard E, Tønnesen H, Ponzer S. Effect of smoking cessation intervention on results of acute fracture surgery: a randomized controlled trial. *J Bone Joint Surg* 2010; 92:1335-42.
- (12) Taylor G, McNeill A, Girling A, Farley A, Lindson-Hawley N, Aveyard P. Change in mental health after smoking cessation: systematic review and meta-analysis. *BMJ* 2014; 348:1-22
- (13) WHO, World Health Organization (2010). Implementing health promotion in hospitals: manual and self-assessment forms. WHO Regional Office for Europe, Copenhagen. [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0009/99819/E88584.pdf](http://www.euro.who.int/__data/assets/pdf_file/0009/99819/E88584.pdf)
- (14) WHO, World Health Organization (2013). Health 2020: A European policy framework supporting action across government and society for health and well-being. World Health Organization Regional Office for Europe, Copenhagen. [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0006/199536/Health2020-Short.pdf](http://www.euro.who.int/__data/assets/pdf_file/0006/199536/Health2020-Short.pdf)
- (15) WHO, World Health Organization (2013). Global action plan for prevention and control of non-communicable diseases 2013-2020. World Health Organization, Geneva. [http://www.who.int/nmh/events/2013/revised\\_draft\\_ncd\\_action\\_plan.pdf](http://www.who.int/nmh/events/2013/revised_draft_ncd_action_plan.pdf)
- (16) Groene O, Jørgensen SJ, Fugleholm AM, Garcia Barbero M. Standards for health promotion in hospitals: development and pilot test in nine European countries. *Int J Health Care Qual Assur Inc Leadersh Health Serv* 2005; 18:300-7.
- (17) Groene O, Alonso J and Klazinga N. Development and validation of the WHO self-assessment tool for health promotion in hospitals: results of a study in 38 hospitals in eight countries. *Health Promot Int* 2010; 25:221-9
- (18) [www.isqua.org](http://www.isqua.org)
- (19) Tønnesen H, Svane JK, Lenzi L, Kopecky J, Suurorg L, Bukholm IRK, Hsu ST, Hübner M, Krogerus S, Kellner-Rechberger S, Masiello MG and the HPH Networks in Tuscany, Italy; Spain; Ontario, Canada and Germany. Handling Clinical Health Promotion in the HPH DATA Model: Basic Documentation of Health Determinants in Medical Records of tobacco, malnutrition, overweight, physical inactivity & alcohol. *Clin Health Promot* 2012; 2:5-11.
- (20) Tønnesen H, Christensen ME, Groene O, O'Riordan A, Simonelli F, Suurorg L, Morris D, Vibe P, Himel S and Hansen PE. An evaluation of a model for the systematic documentation of hospital based health promotion activities: results from a multicentre study. *BMC Health Services Research* 2007; 7:145
- (21) Svane JK, Raisova B, Stanecka Z, Dolezel Z, Richter M, Chalikova J, Vlachova M, Opočenská M and Tønnesen H. Clinical Health Promotion in the Czech Republic: Standards Compliance and Service Provision. *Clin Health Promot* 2014; 4:15-21.
- (22) Oppedal K, Nesvåg S, Pedersen B, Skjøtskift S, Aarstad AKH, Ullaland S, Pedersen KL, Veatne K, Tønnesen H. Health and the need for health promotion in hospital patients. *Eur J Public Health*. 2011; 21:744-9.
- (23) Tønnesen H, Rosswal N, Odgaard MD, Pedersen KM, Larsen KL, Mathiassen, B, Farlie R, Elbirk A, Hüttel M, Danborg L, Vestermark V, Petri AL, Ebbehøj N, Frederiksen M, Hejgaard T. Basic registration of risk factors in medical records. Malnutrition, overweight, physical inactivity, smoking and alcohol (English abstract). *Ugeskr Laeger* 2008; 170:1747-52.
- (24) Shaw CD, Groene O, Botje D, Sunol R, Kutryba B, Klazinga N, Bruneau C, Hammer A, Wang A, Arah OA, Wagner C; on behalf of the DUQuE Project Consortium. The effect of certification and accreditation on quality management in 4 clinical services in 73 European hospitals. *Int J Qual Health Care* 2014; 26 Suppl 1:100-7.
- (25) Botje D, Klazinga NS, Sunol R, Groene O, Pfaff H, Mannion R, Depaigneloth A, Arah OA, Dersarkissian M, Wagner C. Is having quality as an item on the executive board agenda associated with the implementation of quality management systems in European hospitals: a quantitative analysis. *Int J Qual Health Care* 2014; 26 (Suppl 1):92-9.
- (26) Miseviciene I and Zalnieraitiene K. Health promoting hospitals in Lithuania: health professional support for standards. *Health Promot Int* 2012; 28:512-21
- (27) Guo XH, Tian XY, Pan YS, Yang XH, Wu SY, Wang W and Lin V. Managerial attitudes on the development of health promoting hospitals in Beijing. *Health Promot Int* 2007; 22: 182-90.
- (28) Zabeen S, Tsourtos G, Campion J, Lawn S. Type of unit and population served matters when implementing a smoke-free policy in mental health settings. *Int J Soc Psychiatry* 2015 (e-pub ahead of print: Mar 12)
- (29) Pedersen B, Oppedal K, Egund L, Tønnesen H. Will emergency and surgical patients participate in and complete alcohol interventions? A systematic review. *BMC Surg* 2011;11:26.
- (30) Møller AM, Villebro NM. Preoperative smoking intervention: What do patients think? A qualitative study. *Ugeskr Laeger* 2004; 166: 3714-8. [Abstract in English]
- (31) Thomsen T, Esbensen BA, Samuelsen S, Tønnesen H, Møller AM. Brief preoperative smoking cessation counselling in relation to breast cancer surgery: a qualitative study. *Eur J Oncol Nurs* 2009; 13:344-9.
- (32) Lindström D, Sundberg-Petersson I, Adami J, Tønnesen H. Disappointment and drop-out rate after being allocated to control group in a smoking cessation trial. *Contemp Clin Trials* 2010; 3:22-6.