Improving Smile Levels Amongst Health Care Staff In A Women’s and Children’s Hospital With A Standardised Smile Score Scale
K Tan, A Goh, S Lim, S Sim

Abstract
Objective: To promote a friendly and service oriented environment within a large hospital for women and children, staff and service feedbacks were obtained. These revealed that hospital staff did not smile readily when they encountered each other in the hospital. The objective is to improve smile levels amongst health care staff in a hospital using a standardised smile score scale. Methods: A baseline survey on the status of smile of hospital was performed using a standardised Smile Score Scale (with scale from −1 to 10). Smile levels were scored when assessors encountered staff along corridors and lifts. The scores were standardised according to level of familiarity and assessors’ own smile score. Two further surveys were performed after measures to improve smile were implemented. Results: With an assessor smile level of 2 for 165 staff subjects (first survey), the overall standardised smile level was 1.51. Measures were taken by a team to enhance awareness of the importance of smile and to remind staff to smile. Despite these measures, a second survey of 206 staff subjects revealed a smile score level of only 1.43. Another set of measures was implemented which include emphasis on leadership encouragement, spontaneous initiation of smile, and instant positive reinforcements for smile. A third survey of 245 staff subjects revealed an improvement in overall smile score level to 2.00. There was an improvement of 32.5% over the baseline smile score of 1.51. In tandem, the proportion of staff with Smile Score Level 2 and above, decreased from 61.8% in the first survey to 50.0% in the second survey (p<.05) but increased to 72.7% in the third survey (p<.0001). Conclusion: There was improvement of smile levels amongst health care staff. Changing the smile culture in a hospital is a challenging task which requires the correct strategy. Use of a Smile Score Scale is invaluable.

INTRODUCTION
Service quality and clinical quality are important in all hospitals and are often interlinked. KK Women’s and Children’s Hospital (KKH), formerly world’s largest maternity hospital, is an 800-bedder-hospital providing obstetrical and gynaecological services since 1924 and also specialised care for women and children since 1997 (1). One of KKH’s service quality initiatives relates to engendering a culture of smiling within the hospital clinical environment: This is epitomised in KKH Service Quality (SQ) tagline - Service with a Smile. We go the extra mile!

The benefits of smiling are known and substantial (2). The display of positive emotion by employees is positively related to customers' positive affect following service encounters and to their evaluations of service quality (3). To promote a friendly and service oriented environment within a big hospital, staff and service feedbacks were obtained which revealed that hospital staff did not smile readily.

AIM
The aim of this study was to ascertain and improve smile levels amongst health care staff in a hospital using a standardised smile score. This was done within the context of a Process Improvement Project (PIP) of the Division of Obstetrics and Gynaecology, the Corporate Planning Department and the Speciality & Ambulatory Services of the hospital.

METHODS
Improving smile level was identified as important challenge for the hospital in service improvement. A PIP team, known as ‘The Frownbusters’, was initiated. The methodology of Model for Improvement with Plan-Do-Compare/Study-Act (PDCA or PDSA) cycle was followed (4). KKH has been using this methodology for process improvement since
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1998(6). The team decided to focus on smile interaction between staff of the hospital. This project was approved and registered as a process improvement project within the hospital.

Staff differ on what constitutes a cheerful smile and it is difficult for staff to have a clear idea about what degree of smile they should use when dealing with customers. A smile level scale was created from modification and adaptation of a sales promotion pamphlet from another industry(6,7). The criteria for measuring the degree of smile on a scale of one to ten was determined, converting the state of a person’s smile into a quality characteristic called “smile level” in order to facilitate as objective an assessment as possible.

In addition, Smile Score Level Minus 1 and Smile Score Level Zero were created to reflect unfriendly reaction and neutral state. Smile Score Level Minus 1 is an unfriendly stare while Smile Score Level Zero is a neutral face without any smile. Smile Score Level 1 reflects a slight smile with minimal reaction and closed mouth. Smile Score Level 2 shows a smile with a slightly open mouth. Smile Score Level 3 shows a smile with a slightly wider open mouth. Smile Score Level 4 and above show more expressive smiles.

Surveys on the status of smile of hospital were performed using this standardised Smile Score Scale with scale from minus 1 through 0 to 10 (Table 1). Scoring of smile level was done when assessors encountered staff along corridors and lifts. The scores were standardised according to level of familiarity (three levels) and assessors’ own smile score (kept at smile level 2). A non response/neutral response would be considered as smile level zero (0) while a frown response would be considered as smile level negative 1 (-1) score.

The three degrees of familiarity (Known each other, Seen each other before, Unfamiliar) and to ensure equivalence, the number of staff were categorised ensuring approximately equal numbers within each degree of familiarity. The five groups of staff (Administrative Staff – Admin; Allied Health Staff – AH; Doctors – Dr; Nurses – Nurse and Service Support Staff – Others) were taken into account when tabulating the scores.

The same 4 assessors were used for the surveys and they were briefed and rehearsed to ensure they are familiar with the Smile Score Scale before conducting the survey. The assessment were done in a manner where the staff are not aware they are been assessed for the level of smile (single blinded study). This is to avoid bias on from the staff subjects. Assessors standardised approaches and their smile level at 2 and stationed themselves at the same corridors and lifts to assess encounter with staff of the hospital.

A baseline (first) study revealed an overall low smile score. The team brainstormed and identified the important causes using a Fishbone Diagram and Pareto Chart. The identified causes of the overall low smile score, in descending order of importance, were organisation culture, work situation, societal culture, personal attributes and technology.

Interventions to improve smile score were brainstormed. These included proposed implementation for Smile Education and Awareness, Smile Reminder Posters, Smile Technique Education, Smile Competition, Smile Champion/Model, Smile Quiz (e.g. guess whose smile), Smile Skit, Smile Procedure and Protocol (P&P), Smile Taglines/Slogans and Smile Footprint. Only the first three Smile Education and Awareness, Smile Reminder Posters and Smile Technique Education were implemented.

However a second survey revealed that the smile scores were still poor. A second round of the PDCA was conducted. A new set of measures was implemented which include emphasis on leadership encouragement, spontaneous initiation of smile, fun Smile P&P and mass instant positive reinforcements for smile (Fig 2 & 3). Following these measures, the third (final) survey was performed.

RESULTS

With an assessor smile level synchronised at smile level 2, the overall standardised smile level for 165 staff subjects (first study) was 1.51. Measures were taken by the team to enhance awareness of the importance of smile and to remind staff to smile. Despite these measures, a second study of 206 staff subjects revealed a smile score level of only 1.43. Another set of measures which emphasised on leadership encouragement, spontaneous initiation of smile, and mass positive & instant reinforcements for smile, were then implemented. A third study of 245 staff subjects revealed an improvement in overall smile score level to 2.00. There was an improvement of 32.5% over the baseline smile score of 1.51.

In tandem, the proportion of staff with Smile Score Level 2 and above decreased from 61.8% in the first survey to 50.0% in the second survey (p<0.05) but increased to 72.7% in the third survey (p<0.0001).
The three degrees of familiarity (Known each other, Seen each other before, Unfamiliar) influenced the scores as expected. In the third survey, the smile levels were 2.59, 1.93 and 1.47 respectively, in decreasing order for ‘Known each other’, ‘Seen each other before’, ‘Unfamiliar’ categories. The same relationship also existed for the first and second survey.

The five groups of staff (Administrative Staff – Admin; Allied Health Staff – AH; Doctors – Dr; Nurses – Nurse and Service Support Staff – Others) had differing smile responses although the differences were relatively less obvious when compared to the degrees of familiarity. Service support and administrative staff smiled the best, followed by nurses while doctors and allied health staff fared the worst.

Table 1. Staff Smile Surveys and Smile Levels

Assessors’ Smile Level 2. (Administrative Staff – Admin; Allied Health Staff – AH; Doctors – Dr; Nurses – Nurse and Service Support Staff – Others)

**Figure 1**
Table 1a. First Smile Level Survey in April - May 2007 (n=165)

<table>
<thead>
<tr>
<th>Mean Smile Score</th>
<th>Admin</th>
<th>AH</th>
<th>Dr</th>
<th>Nurse</th>
<th>Others</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Known each other</td>
<td>2.33</td>
<td>1.29</td>
<td>2.26</td>
<td>2.10</td>
<td>2.06</td>
<td>2.01</td>
</tr>
<tr>
<td>Seen before</td>
<td>2.95</td>
<td>1.33</td>
<td>1.99</td>
<td>1.69</td>
<td>2.31</td>
<td>1.66</td>
</tr>
<tr>
<td>Unfamiliar</td>
<td>1.00</td>
<td>1.09</td>
<td>0.23</td>
<td>1.12</td>
<td>0.02</td>
<td>0.85</td>
</tr>
<tr>
<td>Overall Mean Smile Level</td>
<td>1.75</td>
<td>1.21</td>
<td>1.19</td>
<td>1.61</td>
<td>1.74</td>
<td>1.51</td>
</tr>
</tbody>
</table>

**Figure 2**
Table 1b. Second Smile Level Survey in November 2007 – January 2008 (n=206)

<table>
<thead>
<tr>
<th>Mean Smile Score</th>
<th>Admin</th>
<th>AH</th>
<th>Dr</th>
<th>Nurse</th>
<th>Others</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Known each other</td>
<td>2.95</td>
<td>2.98</td>
<td>1.67</td>
<td>1.66</td>
<td>2.28</td>
<td>1.98</td>
</tr>
<tr>
<td>Seen before</td>
<td>3.30</td>
<td>0.5</td>
<td>1</td>
<td>1.22</td>
<td>1.41</td>
<td>1.27</td>
</tr>
<tr>
<td>Unfamiliar</td>
<td>1.10</td>
<td>0.5</td>
<td>0.83</td>
<td>1.83</td>
<td>1.03</td>
<td>0.83</td>
</tr>
<tr>
<td>Overall Mean Smile Level</td>
<td>1.46</td>
<td>1.46</td>
<td>1.06</td>
<td>1.61</td>
<td>1.94</td>
<td>1.43</td>
</tr>
</tbody>
</table>

**Figure 3**
Table 1c. Third Smile Level Survey in July – August 2008 (n=245)

<table>
<thead>
<tr>
<th>Mean Smile Score</th>
<th>Admin</th>
<th>AH</th>
<th>Dr</th>
<th>Nurse</th>
<th>Others</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Known each other</td>
<td>2.50</td>
<td>2.41</td>
<td>2.45</td>
<td>2.65</td>
<td>2.06</td>
<td>2.09</td>
</tr>
<tr>
<td>Seen before</td>
<td>2.23</td>
<td>1.83</td>
<td>1.59</td>
<td>1.89</td>
<td>2.13</td>
<td>1.93</td>
</tr>
<tr>
<td>Unfamiliar</td>
<td>1.55</td>
<td>1.43</td>
<td>1.08</td>
<td>1.64</td>
<td>1.67</td>
<td>1.47</td>
</tr>
<tr>
<td>Overall Mean Smile Level</td>
<td>2.12</td>
<td>1.93</td>
<td>1.70</td>
<td>1.59</td>
<td>2.22</td>
<td>2.00</td>
</tr>
</tbody>
</table>

**Figure 4**
Table 2. Proportion of Staff with Smile Score Level 2 and above (range –1 to 5)

<table>
<thead>
<tr>
<th>Surveys</th>
<th>First Survey</th>
<th>Second Survey</th>
<th>Third Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score Level 2 and above</td>
<td>102 (61.8%)</td>
<td>103 (50.0%)*</td>
<td>176 (72.7%)*</td>
</tr>
<tr>
<td>Score Level 1 and below</td>
<td>63</td>
<td>103</td>
<td>67</td>
</tr>
<tr>
<td>Total</td>
<td>165</td>
<td>206</td>
<td>245</td>
</tr>
</tbody>
</table>

*p<0.05 (second survey compared to first survey)
*p<0.05 (third survey compared to first survey)
*p<0.0001 (third survey compared with second survey)

**Figure 5**
Fig 1. Tan et al’s 12 Levels Standardised Smile Score Scale showing Smile Levels minus 1, 0 , 1 to 10
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DISCUSSION

To our knowledge this is the first ever reported study to improve smile level using a smile score scale. This study is applicable not just for the health care industry but for all industries as it is relevant for enhancing staff day to day optimal interaction.

In hospitals and health care settings, many of us are familiar with the pain score. In fact many hospitals are beginning to accept it as the ‘Fifth Vital Sign’. A pain scale measures a patient's pain intensity or other features. Pain scales are based on self-report, observational (behavioral), and/or physiological data. Wong-Baker Faces Pain Rating Scale is a very common visual analog scale to assess pain in patients and has become as indispensable clinical care tool for pain management. Obstetricians and gynaecologists are very familiar with use of the pain score scale for labouring and postpartum women and various gynecological conditions like endometriosis.

On the other hand, obstetricians and gynaecologists are also very familiar with smiles in their work, as when a healthy baby is born or when a wanted pregnancy is confirmed. A smile is a facial expression formed by flexing those muscles most notably near both ends of the mouth. The smile can also be found around the eyes. Like the Wong-Baker Faces Pain Rating Scale, this modified Smile Rating Scale is a visual analog scale. A pain score scale dwells on the negative aspect of wellbeing while a smile score scale focuses on the positive aspect of wellbeing. Both aspects are needed for hospitals as care involve not only reducing discomfort for patients but promotion of wellness and wellbeing for patients and their care givers as a larger picture.

A smile or a smiling face is a symbol of happiness which is a state of mind or feeling such as contentment, satisfaction, pleasure, or joy. Smile begets smile, thus promotes wellbeing. If it can be part of routine clinical measurement like pain, then clinical signs can be made even more useful and meaningful. Improving smile levels amongst health care staff is the first and an important step towards promoting smiles within the hospital as such a smile culture once nurtured, would help engender smiles between staff and patient or between staff and visitor.

Despite the improvement of smile levels, the smile score for this study seemed rather low (1.51 to 2.00) and the variation (-1 to 5) did not make full use of range of the smile scale which extend to Smile Level 10. This may be due to various reasons. Firstly, the habit of smiling is not fully established, given the inhibitory culture of the organisation and the society. The expectation of demeanour within a hospital setting is often more conservative and solemn and this is not easy to change. In addition, the expectation of smile level in hospitals is lower than that of the hospitality service culture of other industries (e.g. tourism). There is scope for smile management and improvement for the hospitals.

Given the conservative culture within hospital, changing the smile behaviour in a hospital is a difficult task. This requires the correct strategy. Our first cycle of PDCA process improvement failed to change the smile scores and culture in
our hospital. The effective strategy (as in the second cycle) emphasises on leadership encouragement, spontaneous initiation of smile, fun Smile P&P and mass instant positive reinforcements for smile.

The challenge lies in engendering a better smile culture in the clinical environment of the hospital and translating to a higher smile score for our patients. This is important as patients are increasingly expectant of a friendlier and a smiling demeanour from their health care providers. Unlike the paternalistic model, most patients nowadays expect a greeting and a smile from a doctor, even in a busy situation. However the tasks of balancing the provision of an appropriate smile in the context of a busy stressful clinical environment together while providing optimal level of care notwithstanding the possibility of the conveyance of solemn diagnosis or bad news, is not easy. As an example, it would be difficult to give an appropriate level of friendly smile in the initial encounter situation when a doctor in the gynaecological clinic is going to break the news of ovarian cancer to the patient and family.

When the results of this study were presented in the hospital, staff responded positively. Many staff were amazed that their smiles can be measured and were thus motivated to smile. There was a greater awareness of the benefits of smile for staff and patients (women, children and family). Many OBGYN staff became aware of the need to smile and improve their levels of smile.

Changing the smile culture in a hospital is a challenging task which requires the correct strategy. Leadership involvement is crucial. Through this project, we were able to change the smile culture in a busy hospital. There was significant improvement of smile levels amongst health care staff as a result of this study project.

This study showed that the use of a smile rating scale is invaluable in developing effective programs to promote smiles and improve smile levels in the hospital. The smile scale is important for standardising and spreading smiles around the world. Further studies are needed to further evaluate the use and validity of the smile score and its application in patient interaction.

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