Development and Psychometric Evaluation of the Speaking Up About Patient Safety Questionnaire

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Objective: Speaking up about safety concerns by staff is important to prevent medical errors. Knowledge about healthcare workers' speaking up behaviors and perceived speaking up climate is useful for healthcare organizations (HCOs) to identify areas for improvement. The aim of this study was to develop a short questionnaire allowing HCOs to assess different aspects of speaking up among healthcare staff.

Methods: Healthcare workers (n = 523) from 2 Swiss hospitals completed a questionnaire covering various aspects of speak up–related behaviors and climate. Psychometric testing included descriptive statistics, correlations, reliabilities (Cronbach α), principal component analysis, and *t* tests for assessing differences in hierarchical groups.

Results: Principal component analysis confirmed the structure of 3 speaking up behavior-related scales, that is, frequency of perceived concerns (concern scale, α = 0.73), withholding voice (silence scale, α = 0.76), and speaking up (speak up scale, α = 0.85). Concerning speak up climate, principal component analysis revealed 3 scales (psychological safety, α = 0.84; encouraging environment, α = 0.74; resignation, α = 0.73). The final survey instrument also included items covering speaking up barriers and a vignette to assess simulated behavior. A higher hierarchical level was mostly associated with a more positive speak up–related behavior and climate.

Conclusions: Patient safety concerns, speaking up, and withholding voice were frequently reported. With this questionnaire, we present a tool to systematically assess and evaluate important aspects of speaking up in HCOs. This allows for identifying areas for improvement, and because it is a short survey, to monitor changes in speaking up—for example, before and after an improvement project.

Key Words: patient safety, speaking up, questionnaire, climate, healthcare

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Because evidence about hospital-related deaths due to medical errors is rising, a change from the traditional culture of healthcare organizations (HCOs)[1] toward more teamwork and a good safety culture occurred.[2] Open communication about patient safety concerns among healthcare workers (HCWs) has raised great attention and is commonly known as "speaking up."[3–6]

Speaking up can be defined as assertive communication of patient safety concerns through information, questions, or opinions in clinical situations where immediate action is needed to avoid harm for the patient.[7,8] Typically, speaking up relates to staff challenging the unsafe behavior of their coworkers or supervisors. Speaking up can be beneficial in a variety of clinical settings, such as in operating rooms, where the probability of error is high and nearly half of the surgical complications are estimated to be preventable,[9] or in specific situations, such as violation of safety rules (e.g., poor hand hygiene) or false medication. Speaking up has been shown to be positively associated with patient safety in previous studies.[6,10,11] A variety of factors that lead to individuals' withholding voice or even collective, organizational silence have been identified.[12,13] Individual decision-making about whether to speak up or to withhold voice commonly involves complex trade-offs, that is, evaluations of costs and benefits, such as damaging personal relationships versus preventing patients from harm.[6,14] Hierarchy has been shown to affect speaking up; HCWs of lower hierarchy levels are commonly less likely to speak up.[7,15,16] They may for example doubt of a positive evaluation from their superiors when speaking up.[17] Furthermore, past experiences with colleagues or superiors, such as not feeling supported, may lead to withholding voice and resignation, especially in HCWs with lower hierarchical levels.[3] The decision whether one speaks up or withholds his or her voice can be categorized into individual factors (e.g., age, personality), contextual factors (e.g., the presence of patients and coworkers or the risk estimation), and organizational factors (e.g., hierarchy).[15]

In our previous study conducted in 9 oncology departments, nearly every second HCW was confronted with potentially harmful errors and rule violations at least sometimes, whereas 70% of the respondents had chosen to remain silent at least once in the past.[4] With few exceptions, however, little is known about the perceived frequencies of concerns, frequencies of speaking up, and of withholding voice in HCOs in general.

Several questionnaires were developed in the recent years that assess constructs that are known to affect speaking up,[18] such as safety climate questionnaires,[19–21] the psychological safety at workplace questionnaire,[22] the speaking up climate for patient safety and professionalism questionnaire,[5] and the employee silence scales.[23]

Despite the growing evidence of speaking up as an important resource for patient safety, there is no short instrument that allows HCOs to systematically assess staff behaviors, experiences, and perceptions related to speaking up in the organization.

The aim of the study was to develop a questionnaire allowing HCOs to systematically assess dimensions of both frequencies of speak up behaviors and speak up–related climate. We differentiate between self-reports that are behavior oriented, that is, assessing the frequency of specific speaking up behaviors and self-reports that are climate oriented, that is, assessing the subjective perception of work and organizational aspects that are relevant for speaking up. We intended to develop a survey instrument that would be short and easy to self-administer as baseline or follow-up assessment, applicable to both doctors and nurses, and easy to use and interpret by HCOs.

METHODS

Study Population

The survey was conducted in a pediatric university hospital and a general hospital located in the German-speaking part of Switzerland. Medical doctors and nurses were asked to participate and received a self-administered written questionnaire. Two

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reminders were sent per e-mail to the entire sample. Finally, 538 individuals completed the questionnaire (i.e., participation rate, 37%). Responders with missing data on their function in hospital (professional group and managerial function) were excluded, yielding a final sample of 523 completed questionnaires.

Item Generation and Questionnaire Structure

After the questionnaire was pretested in 2 hospitals (n = 31), which led to the exclusion of 3 items because of small answer variability of the items, our questionnaire included 11 behavior-related speak up items, 1 simulated behavior (vignette) with 4 items, and 1 item assessing 6 barriers to speaking up. To assess speak up–related climate, 13 items were included.

Speak Up–Related Behavior

Three scales (safety concerns, speaking up, withholding voice) addressed the frequency of specific behaviors over the past 4 weeks. The perceived concerns (PC) scale covers 3 items that ask how often over the past 4 weeks respondents had experienced different types of patient safety concerns (Table 1; PC1–PC3). The speaking up (SU) scale covers 4 items that ask how often over the past 4 weeks respondents performed specific speaking up behaviors (SU1–SU4), and the withholding voice (WV) scale mirrors these 4 items and asks how often over the past 4 weeks respondents had chosen *not* to speak up in specified situations, thus to withhold their voice (WV1–WV4). These items were adapted from our previous surveys.[4] The questions about withholding voice were adapted from the employee silence scale and were used in our previous studies.[23]

Response options for the 3 scales were "never" (0 times in the last 4 weeks), "rarely" (1–2 times), "sometimes" (3–5 times), "often" (6–10 times), and "very often" (more than 10 times in the last 4 weeks).

In addition, item 12 explored the relevance of self-perceived barriers in bringing up patient safety concerns (6 potential barriers; yes/no response scale). Finally, a simulated behavior (vignette) was designed by the research team, together with doctors and nurses. This vignette serves as a standardized stimulus and describes a generic situation requiring speaking up and was followed by 4 items (VIG [vignettes] 1–VIG4; Table 2) assessing respondents' anticipated behaviors if they would find themselves in a similar situation (7-point Likert scale).

Speak Up–Related Climate

Six of the 13 items were adapted from the speak up climate safety scale[5]: (*a*) "When one expresses patient safety concerns, this results in meaningful changes in my unit"; (*b*) "When I have patient safety concerns it is difficult to bring them up"; (*c*) "The culture in my unit/clinical area makes it easy to speak up about patient safety concerns"; (*d*) "In my unit/clinical area, I observe others speaking up about their patient safety concerns"; (*e*) "I am encouraged by my colleagues (or [*f*], by my shift supervisor) to speak up about patient safety concerns." Item (*f*) was newly added. Further items were included from a questionnaire assessing psychological safety[22]: (*a*) "I can rely on my colleagues, whenever I encounter difficulties in my work"; (*b*) "I can rely on the shift supervisor, whenever I encounter difficulties in my work"; (*c*) "When someone in my unit makes a mistake, it is often held against them." Furthermore, 2 items concerning feelings of resignation ("Having to remind of the same safety rules again and again is frustrating" and "Sometimes I become discouraged because nothing changes after expressing my patient safety concerns") were included, which were already used in our previous survey.[4] Finally, 2 items relying on past experiences (i.e., "My colleagues [or shift supervisors, respectively] react appropriately, when I speak up about my concerns about patient safety") were

TABLE 1. Frequencies of Perceived Concerns, Withholding Voice, and Speaking Up for the Total Group and Stratified by Managerial Function and Profession

In everyday work, it sometimes happens that things go wrong and risks to patients arise. This could be as a result of medication error, poor hand hygiene, or missing documentation. Over the past 4 weeks, how often…		n	At Least Once, % Total	MF	No MF	Doctors	Nurses
Perceived concerns (α = 0.73)							
PC1	… have you had specific concerns about patient safety?	522	80.3	73.4	82.1	78.3	80.9
PC2	… have you observed an error which—if uncaptured—could be harmful to patients?	522	62.6	59.6	63.4	63.6	62.3
PC3	… have often have you noticed that your workplace colleagues have not followed important patient safety rules, intentionally or unintentionally?	522	65.7	65.1	65.9	60.5	67.4
Withholding voice (α = 0.76)							
WV1	… did you choose not to bring up your specific concerns about patient safety?	522	35.3	22.9	38.5	26.4	38.2
WV2	… did you keep ideas for improving patient safety in your unit to yourself?	520	33.9	22.9	36.7	24.0	37.1
WV3	… did you remain silent when you had information that might have prevented a safety incident in your unit?	522	16.7	12.8	17.7	11.6	18.3
WV4	… did you not address a colleague (doctors and/or nurses) if he/she did not follow important patient safety rules, intentionally or unintentionally?	521	41.5	29.4	44.7	28.7	45.7
Speaking up (α = 0.85)							
SU1	… did you bring up specific concerns about patient safety?	520	77.3	78.9	76.9	74.4	78.3
SU2	… did you address an error which—if uncaptured—could be harmful for patients?	516	74.4	78.0	73.5	71.9	75.3
SU3	… did you address a colleague (doctors and/or nurses) when he/she did not follow important patient safety rules, intentionally or unintentionally?	513	66.9	65.4	67.2	57.9	69.8
SU4	… did you prevent an incident from occurring as a consequence of bringing up specific concerns about patient safety?	504	53.8	53.9	53.8	44.8	56.7

MF, managerial function.

TABLE 2. Means and SDs for the Hypothetical Situation (Vignette) for the Total Group and Stratified by Managerial Function and Profession

	You are on a daily round with several doctors and nurses. During the round, the consultant doctor shakes hands with a patient. However, before examining the patient's wound the consultant does not apply gloves and/or does not disinfect their hands.	**Total**		**MF**		**No MF**		**Doctors**		**Nurses**	
		Mean	**(SD)**	**Mean**	**(SD)**	**Mean**	**(SD)**	**Mean**	**(SD)**	**Mean**	**(SD)**
VIG1	How realistic is this situation? (1 = not at all, 7 = very realistic)	5.32	(1.80)	4.86	(0.20)	5.44	(0.09)	4.51	(0.18)	5.58	(0.08)
	*P**						<0.05				<0.001
VIG2	If nobody acts, how dangerous do you think this situation is for the patient? (1 = not dangerous at all, 7 = very dangerous)	5.50	(1.27)	5.16	(0.14)	5.58	(0.06)	4.80	(0.12)	5.72	(0.06)
	*P**						<0.05				<0.001
VIG3	How likely is it that you try to alert the consultant to the missed hand disinfection/gloves (using words or gestures)? (1 = very unlikely, 7 = very likely)	4.66	(1.98)	5.58	(0.14)	4.42	(0.10)	4.89	(0.15)	4.59	(0.10)
	*P**						<0.001				n.s
VIG4	Would you feel uncomfortable to instruct the consultant to disinfect their hands/wear gloves? (1 = not at all uncomfortable, 7 = very comfortable)	4.10	(2.09)	2.92	(0.17)	4.40	(0.10)	3.49	(0.16)	4.29	(0.11)
	*P**						<0.001				<0.001

*One-sided *t* test.

MF, managerial function; n.s, non significant.

developed. The questions were coded in a 7-point Likert scale from "strongly disagree with this statement" to "strongly agree with this statement."

Statistical Analysis

Descriptive statistics (means and percentages of items and scales) assessed the distribution of the data. Two exploratory factor analyses (principal component analysis [PCA]) for the items concerning frequencies of behavior (i.e., perceived concerns, withholding voice, speaking up) as well as the items concerning speak up–related climate were performed to identify the underlying scales. Eigenvalues and scree plots were used to determine the number of extracted factors. Orthogonal varimax rotation was used to maximize for independence of the measured dimensions. Reliabilities of the explored scales were measured with Cronbach α. The suitability of the behavioral and the climate items for the PCA was approved by the Kaiser-Meyer-Olkin measure of sampling adequacy (kmo = 0.87 and 0.86, respectively) and the Bartlett test of sphericity ($P < 0.001$ for both behavior and climate items).

There was a total of 0.5% missing data across all items. The assumption of missing completely at random was confirmed by dividing respondents into those with and without missing data, then using *t* tests for differences in mean of the key variables ($P > 0.05$).[24]

Content validity was explored by testing for differences (*t* tests; 1-sided $P < 0.05$ was considered statistically significant) between hierarchical groups, and association of hierarchical function with perceived barriers for speaking up was assessed using χ^2 tests. Content validity was also investigated by correlating the behavior-related scales with climate scales. We hypothesized that there is an association between speak up climate and behaviors, such as that a more positive climate would be associated with lower frequencies of withholding voice.

Based on the results of our past study, we conducted a power analysis with a 2-sided α of 0.05 and power of 0.9.[4] We expected a sample size of n = 489 to detect differences between HCW with and without managerial function for the perceived frequency of patient safety concerns.

All analyses were performed with Stata/IC 14.2 (College Station, Tex).

Ethical Approval

The study was exempted from full ethical review by the ethics committee of the Canton of Zurich, Switzerland (BASEC-Nr. Req-2016-00462).

RESULTS

The response rate was 37%, resulting in a sample of n = 523. Table 3 summarizes characteristics of the study sample.

Speak Up–Related Behavior Assessment

All behavior-related items were fully included in the final survey instrument. The conducted PCA resulted in 2 factors with eigenvalue greater than 1, 1 factor with items of perceived concerns and the second with the speaking up and withholding voice items. Because factor loadings of this second component were inversely related for speaking up versus for withholding voice, a PCA forcing 3 factors was performed. Each of the factors loaded clearly on the concern, silence, and speak up scale. The total variance explained by the 3 factors was 65%, which was superior to the 2 components solution (58%) (data not shown).

A majority of the HCWs perceived patient safety concerns, potential harmful errors, and rule violations over the past 4 weeks. Between 17% and up to 42% of the HCWs remained silent for at least once, for example, kept information that might have prevented a safety incident. More than half of the HCWs reported to have prevented an incident by speaking up, and 3 quarters would speak up if they considered an error harmful for patients.

Healthcare workers without compared with HCW with managerial function as well as nurses compared with doctors had statistically significant higher means in the average scale scores of the concern scale and the silence scale. The average speak up scale

TABLE 3. Characteristics of the Study Sample

Total, n	523
Hospital 1, n (%)	295 (56.4)
Hospital 2, n (%)	228 (43.6)
Males, %	17
Age, mean (SD), y	37.7 (11.2)
Profession	
Nurse	73.0
Nurse in training	4.2
Junior health professional	9.2
Nurse	46.7
Nursing expert	8.2
Head nurse	4.8
Doctors	24.7
Resident	9.4
Attending	6.5
Senior and chief	8.8
Other	2.3
Medical area	
Internal medicine, inpatient, and outpatient services	26.4
Surgery (including day unit), orthopedics/spinal medicine	20.3
Gynecological clinic	3.8
Emergency	8.0
Operating room, recovery room, anesthesia, day unit	12.4
Intensive care unit and neonatology	18.0
Other clinical area	1.7
In several areas equally	8.2
Duration of employment in this hospital	
≤2 y	28.4
>2 and ≤5 y	19.2
>5 and ≤10 y	16.9
>10 and ≤20 y	22.4
>20 y	13.2
Working hours per week of patient care	
<10 h	6.6
≥10 and <24 h	26.8
≥24 and <40 h	32.8
≥40 h	33.9

score was statistically significantly higher in nurses than in doctors (data not shown).

Figure 1 shows the percentages of perceived barriers stratified by profession and managerial function. More than half of HCWs perceived the presence of patients or relatives as a barrier to speak up. Not being able to predict the reaction of the person causing concern and the perceived ineffectiveness of speaking up were also frequently mentioned barriers. All barriers were reported statistically significantly more often by nurses than by doctors, with the exception of the uncertainty how to strike the right note, which was reported statistically significantly more often by doctors. Healthcare workers without managerial function were more likely to report barriers toward speaking up, with statistically significant results for the following 3 barriers: the reaction of the person causing concern is not possible to predict, ineffectiveness (there is no difference whether I state my concerns or not), and fear of a negative reaction (data not shown).

Results for the vignette items are shown in Table 2. In general, means differed statistically significantly by managerial and professional function, such as that a lower hierarchical status compared with a higher status was associated with identifying the situation as more realistic and more dangerous. Furthermore, staff without managerial function was less likely to speak up in the presented scenario.

Speak Up–Related Climate Assessment

After factor analysis, 10 of 13 items were included in the final survey instrument. Means and factor loadings of the finally included climate items are shown in Table 4. A first PCA performed with eigenvalue greater than 1 resulted in 2 components. Because the scree plot indicated a break after the third component (eigenvalue, 0.95) and our original items were based on 4 different instruments, we additionally performed a PCA with 3 and 4 forced factors. Finally, comparing the 2-, 3-, and 4-factor solution, we considered the 3-factor solution superior. The 3-factor solution explained 60% of the overall variance from the items concerning speak up climate.

According to the results of the PCA, 2 items ("When one expresses patient safety concerns, this results in meaningful changes in my unit" and "When I have patient safety concerns it is difficult to bring them up") did not clearly load on 1 factor and had low factor loadings and were thus removed. One further item ("When someone in my unit makes a mistake, it is often held against them") was deleted because of the low item total correlation. The 3 final scales were named psychological safety for speaking up scale (PSS), encouraging environment for speaking up scale (EES), and resignation scale (RES).

Content validity was first tested by analyzing differences in responses in relation to respondents' hierarchical position. As expected, HCWs without managerial function compared with HCWs with managerial function (and nurses compared with doctors, respectively) had statistically significant lower levels on the PSS and ESS and higher levels on the RES (Fig. 2). The only exception being that means of the EES did not differ significantly between doctor and nurses. As a second approach to content validity, we inspected correlations between behavior-related and climate scales. The PSS was negatively correlated with withholding voice and speaking up (−0.53, −0.23, respectively). The EES was only weakly negatively correlated with withholding voice and not correlated with speaking up (−0.36, −0.04, respectively). Resignation was positively correlated with withholding voice and speaking up, correlations being stronger in withholding voice (0.42, 0.32, respectively) (Table 5).

DISCUSSION

Speak Up–Related Behavior Assessment

Three scales, 1 vignette, and perceived barriers defined this assessment. Results from the PCA indicated that the scales assessing the frequencies of patient safety concerns, speaking up, and withholding voice clearly differed from each other and were reported frequently. These results are in line with a conceptual framework defined by Van Dyne et al[25] concluding that silence and speaking up are separate, multidimensional constructs, which are mainly distinguishable by the different motivations from an individual to withhold voice versus speaking up. However, most of the previous studies focused either on speaking up or on withholding

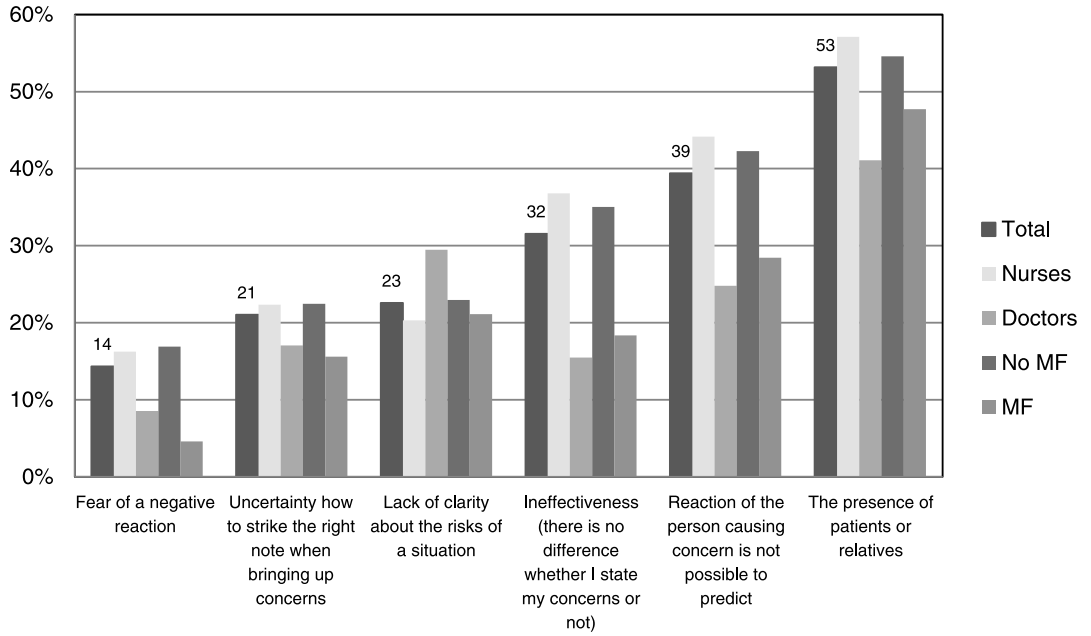

FIGURE 1. Frequencies of reported barriers toward speak up for the total group and stratified by profession and hierarchy.

voice.[4,5,23,26] Our empirical results confirm our approach to assess both theoretical constructs, speaking up and remaining silent.

The developed questionnaire is sensitive to discriminate between behavioral patterns in different groups. As according to previous research,[3,27] nurses compared with doctors, and HCWs without compared with HCWs with managerial function, reported more frequently having had safety concerns and withholding voice.

Barriers toward speak up were widely examined in the past,[6,14,28,29] and, in our study, the ranking of the 6 barriers as well

TABLE 4. Means, SDs, and Factor Loadings for the Speaking Up–Related Attitude Scales

					Factor Loadings*		
		n	Mean	(SD)	Factor 1	Factor 2	Factor 3
Psychological safety for speaking up (α = 0.84)							
PSS1	I can rely on my colleagues (doctors and/or nurses) whenever I encounter difficulties in my work.	521	5.68	(1.21)	**0.50**	−0.07	−0.11
PSS2	I can rely on the shift supervisor (person in charge of a shift) whenever I encounter difficulties in my work.	522	5.75	(1.38)	**0.47**	0.01	−0.10
PSS3	The culture in my unit/clinical area makes it easy to speak up about patient safety concerns.	521	5.43	(1.37)	**0.34**	0.13	0.06
PSS4	My colleagues (doctors and/or nurses) react appropriately, when I speak up about my concerns about patient safety.	522	5.26	(1.24)	**0.33**	0.07	0.09
PSS5	My shift supervisors (person in charge of a shift) react appropriately, when I speak up about my patient safety concerns.	519	5.53	(1.27)	**0.33**	0.18	−0.02
Encouraging environment for speaking up (α = 0.74)							
EES1	In my unit/clinical area, I observe others speaking up about their patient safety concerns.	522	5.29	(1.38)	−0.03	**0.42**	0.01
EES2	I am encouraged by my colleagues (doctors and/or nurses) to speak up about patient safety concerns.	520	4.65	(1.66)	−0.04	**0.56**	−0.03
EES3	I am encouraged by my shift supervisor (person in charge during a shift) to speak up about patient safety concerns.	519	4.50	(1.74)	0.01	**0.53**	−0.08
Resignation toward speaking up (α = 0.73)							
RES1	Having to remind staff of the same safety rules again and again is frustrating.†	517	3.96	(1.98)	−0.05	−0.10	**0.69**
RES2	Sometimes I become discouraged because nothing changes after expressing my patient safety concerns.†	519	3.18	(1.86)	0.01	0.06	**0.60**

*Printed in bold are the rotated loadings defining the 3 components.

†Negatively worded items.

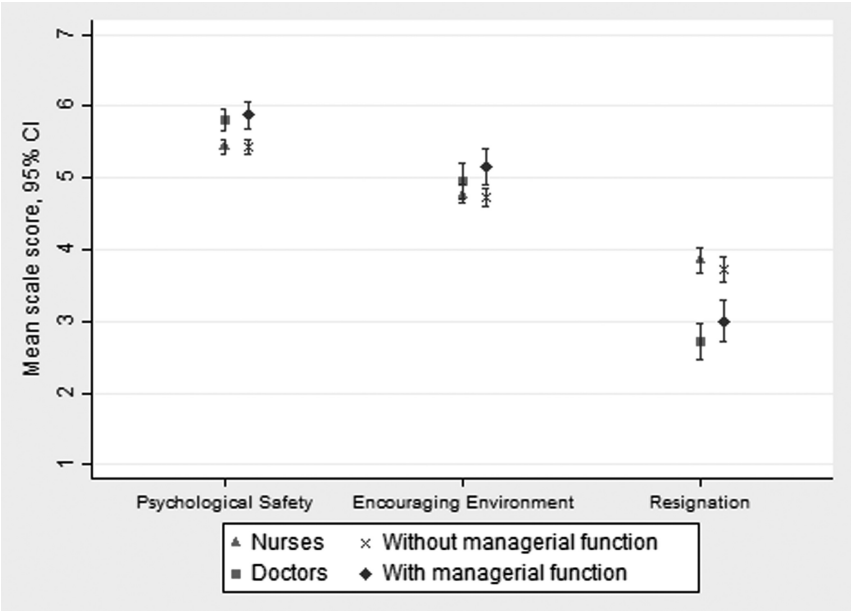

FIGURE 2. Means of the psychological safety, encouraging environment, and resignation scale stratified by profession and managerial function.

as the reported frequencies of barriers differed between hierarchical groups. This may be explained by the fact that the interaction between individual and organizational factors, including the history between people, and the setting of the complex organizational environment and dynamics may differ by hierarchical position.[18] Assessing barriers via our short questionnaire provides HCOs with practical indicators for the implementation and monitoring of possible interventions affecting safety culture. For example, our results confirm previous qualitative evidence[7] that speaking up in the presence of patients and family seems to be a common concern and could be addressed by hospital wide guidance.

In addition, with our vignette, we aimed to assess a situation that could potentially happen to nearly all nurses and doctors working in a hospital. Vignettes are valid tools for assessing attitudes and behavior,[27,30] and their advantage is that respondents answer to a standardized situation, which means the results are less contaminated by differences in vaguely imagined or past experienced situations.

Speak Up–Related Climate Assessments

Based on data analyses, our questionnaire covers 3 speaking up climate-related subscales: psychological safety for speaking up, encouraging environment, and resignation.

Psychological safety is positively related to personal engagement in work, team learning engagement, and giving and seeking feedback, and it enables team members to bring up concerns.[31] As expected, we observed significant differences between doctor versus nurses and HCWs with versus HCWs without managerial, such as that a higher hierarchical level was positively associated with psychological safety. These results are supported by research,[3,4,32] and thus, our selected items are considered valid and appropriate, also to identify gaps between different groups within a HCO.

The PSS discriminated from the EES in the PCA. Although the PSS addresses the more cultural conditions of an HCO, EES captures the perception of HCWs toward being encouraged by colleagues and supervisors as well as in the observation of others speaking up, thus, representing daily experiences related to speak up. Because leadership style is known to affect team performance[33] and safety culture,[34] this scale could become an important tool to evaluate change after interventions, enabling leaders to encourage HCWs without managerial function to speak up.

Furthermore, RES was clearly confirmed as a single construct by the PCA and differences between professions and managerial functions were highest among the 3 climate scales. The high level of resignation among staff, that is, nurses, is alarming. Healthcare organizations need to pay attention to and work on reducing resignation to integrate each staff member's capacity to identify and thus avoid medical errors. The importance to include resignation in assessing speaking up is also substantiated by previous research: a recent metasynthesis of 11 qualitative research studies identified 4 themes playing a major role for withholding voice and reported the past experience of ineffective speaking up being a main driver for remaining silent in the future.[3]

Correlations Between Speak Up–Related Behavior and Climate Scales

The results of our correlation analysis confirm that the reported behaviors are connected to perceived climate but also suggest that the relation between climate and speaking up and silence is not the same. All climate-related scales were more strongly correlated with silence compared with speaking up. In particular, higher levels of psychological safety and encouraging environment are associated with lower frequencies of withholding voice but not

TABLE 5. Correlations of the Frequencies of Speaking Up and Withholding Voice With the Attitudes-Related Speak Up Scales

	Silence Scale	Speak Up Scale
PSS	−0.53	−0.23
EES	−0.36	−0.04
RES	0.42	0.32

with higher frequencies of speaking up. Thus, different factors seem to be important for speaking up behavior than for withholding voice; again, confirming our decision to include "silence" as a decent construct in our survey. The result that resignation is positively correlated with both withholding voice and speaking up is surprising, and we could only speculate on explanations. But obviously, frequently speaking up and withholding voice.

Strengths and Limitations

Up to our knowledge, there is no tool that combines a wide spectrum of speak up–related behaviors and climate aspects in a single questionnaire. A major strength is that the questionnaire was tested in doctors and nurses and can be self-administered in all HCWs, who have contact to patients. Because it is fairly short, the questionnaire can be used for baseline measurement as well as for evaluation after possible interventions.

The power of our results may have been underestimated, because only complete cases were analyzed for the structure of the factors. However, because the missing completely at random assumption was confirmed and the number of cases with missing data was small, the deletion of incomplete cases does not introduce any bias. Nonresponse bias cannot be ruled out, but because the distribution between doctor and nurses and other demographic factor are similar to the distribution in the general hospital population, this may have not affected the results. A further limitation is a possible recall bias, but because frequencies were assessed only over the past 4 weeks, recall bias was minimized.

CONCLUSIONS

With this questionnaire, HCOs can assess and evaluate systematically important aspects of speaking up, which allows for identifying needs and designing possible interventions to improve speaking up, which finally will increase patient safety. This questionnaire has been tested in the German-speaking part of Switzerland, and in a further step, the questionnaire will be validated in other Swiss languages (French, Italian) and in other countries and languages (Germany, United Kingdom). This will allow for valuable cross-country comparisons of speaking up behaviors and climate.

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