



Title	An investigation on dysphonic patients' and clinicians' perception of voice-related communication difficulties
Other Contributor(s)	University of Hong Kong
Author(s)	Lam, Miu-yee; 林妙儀
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**An investigation on dysphonic patients' and clinicians'
perception of voice-related communication difficulties**

Lam Miu Yee, Miu

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ABSTRACT

Functional impact of voice disorder on patient's life is becoming more significant when considering treatment options nowadays. This study explored the specific voice-related communication difficulties encountered by voice-disordered patients in daily communication, job, social communication and emotion domains. It also compared dysphonic patients' and clinicians' perception of voice-related communication difficulties. Eighteen dysphonic subjects and eight speech pathologists were recruited and attended three individual nominal group meetings using the nominal group technique (NGT). Results revealed that: (1) daily communication and emotional state are more affected areas than job and social communication domains in dysphonic patients; (2) both clinicians and dysphonic patients generated more specific communication difficulties than general communication difficulties; and (3) the dysphonic patients and clinicians differed slightly in importance rating on the four communication domains. This information contributes to clinicians in applying functional approach in treating dysphonic patients clinically and deciding appropriate treatment goals for dysphonic individual.

Key words: functional approach, quality of life, communication difficulties, dysphonia

INTRODUCTION

A voice disorder can greatly impact on an individual's psychological state, physical functioning, social life and communication functioning. Smith, Taylor, Mendoza, Lemke and Hoffman (1998) believed that the functional impacts of voice disorder on one's life is becoming more significant when considering treatment options in today's changing health care climate. Recently, there has been much debate on applying functional or client-centered approach in treating dysphonic patients (Ramig & Verdolini, 1998).

Importance of using functional approach in treating voice patients

There has been growing literatures documenting the use of different quality of life measures, such as Voice Disability Index (Koschke, 1993), Voice Handicap Index (Jacobson, Johnson, Grywalski, Silbergleit, Jacobson & Benninger, 1997), Voice-Related Quality of Life (Hogikyan & Sethuraman, 1999) and Voice Outcome Survey (Gliklich, Glovsky & Montgomery, 1999) and Voice Activity and Participation Profile (Ma & Yiu, 2001) to evaluate functional impacts of dysphonia. The growing of these assessment tools in assessing patients' quality of life evidences the importance of applying a functional approach in treating voice patients. Raaijmakers, Dekker and Dejonckere (1998) believed that both clinician-judged voice impairments and patient-perceived impacts of quality of life due to the disorder should be considered.

This allows the clinician to get a wholistic picture of the voice disorders and to adjust the treatment focus according to the individual needs of the client. Benninger, Gardner, Jacobson and Grywalski (1997) further pointed out that clinician should not “overlooked” the impact of voice problem on the individual’s quality of life.

Functional approach

Enderby and John (1997) argued that the final goal of health care should be the maximization of functions in daily activities. Functional approach considers treatment tailor-made for patient’s communication needs. For example, if a teacher complains that s/he is unable to raise his/her voice in class due to his/her voice problem. Functional approach would consider this particular individual voice-related communication need. Clinicians could decide appropriate treatment goal focusing on improving the teacher’s projection of voice in class.

One way to achieve applying tailor-made functional approach in dysphonic patients is to get the first-hand information about specific voice-related communication needs from dysphonic patients. This valuable information plays an important role in applying functional approach in dysphonic patients. It also contributes to clinicians in prioritize voice-related treatment goals in dysphonic patients.

Dysphonia can affect communication and social life, and patients have reported

psychological and emotional problems as a direct consequence of their voice disorders (Krischke, Weigelt, Hoppr, Kollner, Klotz, Eysholdt and Rosanowski, 2005). Voice disorder could pose communication difficulties on daily communication, social communication, job, and influence emotional states. For example, in daily communication, dysphonic patients may face difficulties in getting their messages across under noisy environments. They may avoid participating in social activities such as singing Karaoke. Their voice problems may greatly affect their job efficiency if their jobs are voice-dependent such as singers or teachers. Their voice problems may bring along depression, frustration or anger. These difficulties impact one's life in different degree. It may be of great value in knowing which communication domain dysphonic patients concern most. It is believed that the domain dysphonic patients concern most represents it is significantly affected and thus warrants treatment.

Currently, there is little evidence-based guidance on how to carry out voice therapy concerning the functional aspects of dysphonic patients. This hinders the development of functional treatment of voice disorders in dysphonic patients. The patient's perceptions of the effects of dysphonic on quality of life often drive the need for intervention (Karnell, Melton, Childes, Coleman, Dailey & Hoffman, 2007). It is believed that knowing dysphonic patients' voice-related communication difficulties allows clinician to plan more appropriately functional voice management which

improves patients' functional communications. Therefore, it is particularly important to explore dysphonic patients' perception of specific communication difficulties. In addition, little is known about which area is the most affected in dysphonic patients in Hong Kong. Furthermore, there is no existing literature comparing about the clinician's and patient's perception on the relative importance on the four communication domains: Daily communication, social communication, job, and emotion in dysphonic patients. It is valuable information contributing to clinical functional treatment planning and prioritization.

Comparison dysphonic patients' and clinician's perception of voice-related communication difficulties

Current literatures reviewed that clinician may not fully address the specific needs of patients (Lomas, Pickard & Mohide, 1987). It is important to ensure that the clinician's perception of communication difficulties faced by their patients really reflects what patients' communication difficulties in order to plan appropriate treatment according to the patients' functional needs. Lomas et al. (1987) had conducted a study which found that aphasic patients could generate more specific communication difficulties than clinician. They hypothesized further that this phenomenon could also apply to other different disorders. However, there is no existing literature neither comparing about the specificity of the perception of

voice-related communication difficulties from clinicians and dysphonic patients nor studying about the needs of dysphonic patients from a patient's perspective. Such information is important for contributing dysphonic patients' perspective of voice-related communication difficulties to current traditional voice therapy which prompts the development of functional approach in voice management. It is also valuable information for clinicians to decide treatment goals addressing the specific needs of dysphonic patients.

Therefore, the present study aimed to explore dysphonic patients' first-hand information about their perceived communication difficulties. Moreover, it aimed to investigate whether there is a difference between the clinician's and patient's perception of communication difficulties in dysphonic patients. It is hypothesized that 1) the dysphonic patients would generate more specific communication difficulties than clinicians; and 2) the dysphonic patients and clinicians would have difference in rating importance on the four communication domains: daily communication, social communication, job and emotion.

METHODS

Participants

Three groups of subjects were recruited in the study. (1) Dysphonic group 1

consisted of nine dysphonic subjects who had various laryngeal pathologies and age ranged between 20 and 55 years. The subjects were made up of employed and retired people, students and housewives. (2) Dysphonic group 2 was made up of nine dysphonic subjects who were matched with dysphonic group 1 in gender and age (Table 1). The subjects were made up of employed people, students and housewives. Dysphonic group 2 aimed at providing a comparability check on the representativeness of the communication difficulties generated by dysphonic group 1. The criterion for age range in selecting the subjects was based on the studies done by Hertegard (1988), Herrington-Hall, Lee, Stemple, Niemi & McHone (1988), Cooper (1973) and Yiu & Ho (1991). They suggested that the majority of dysphonic patients were within age range 20-55. All the dysphonic subjects (i) did not received any voice treatment was received before since treatment may pose impacts on the patients' perception of their communication difficulties. (ii) They have experienced voice disorders for at least four months. (iii) Their voices were perceptually judged as dysphonic by the investigator and were evaluated as dysphonic using Computerised Speech Lab instrumentally. (3) Clinician group consisted of eight qualified speech therapists who have worked in public or private hospitals or clinics for at least three years and were experienced in assessing and treating various types of laryngeal pathologies on a daily basis.

Table 1. Demographic data of the subjects

Characteristics	Dysphonic group 1	Dysphonic group 2
Age Mean (years)	36.22	28.56
Age SD	15.66	13.03
Age Range (years)	21-55	20-55
Female	7	7
Male	2	2
Total	9	9
Career Distribution (number)	Student (2)	Student (6)
	Teacher (2)	Teacher (1)
	Driver (1)	Factory worker (1)
	Banking (1)	Housewife (1)
	Housewife (2)	
	Retired (1)	

Procedures

All subjects in both dysphonic group 1 and 2 were given the Voice Activity and Participation Profile (Ma & Yiu, 2001) to complete. This aimed at assessing their self-perceived voice problem, activity limitation and participation restriction in order to examine their self awareness of their voice problem. It is believed that only if the patients have self awareness of their voice problems could they generate perceived communication difficulties reliably. The exclusion criterion for the score was less than 51.28 which is the cut-off point for the VAPP (Ma & Yiu, 2001). The 18 subjects in dysphonic group 1 and 2 were included in the study with a mean VAPP total score of 127.78 (standard deviation = 38.34, range = 52-202).

In dysphonic group 1, two nominal group meetings, with six and three subjects

in a group respectively, were conducted. Nominal group technique (NGT) described by Delbecq, Van. De. Ven and Gustafson (1975) were used in data collection. In dysphonic group 2, two nominal group meetings, with five and four subjects in a group, were conducted. All the meetings were held in a quiet room at Division of Speech and Hearing Sciences, The University of Hong Kong. The meetings were audio recorded using MP3 player (SAFA, MC05IE05114). At the meetings, the subjects were seated in an open 'U' shape. Two facilitators (one was the investigator of the study, the other one was recruited from the final year speech pathology student) stood in front of the subjects with a writing board behind. Each group meeting lasted for approximately 45 minutes. The NGT procedures suggested by Delbecq et al. (1975) were applied as follows:

1. Four focused questions were presented to the group verbally and in written form.

The four questions were: 1) In daily communication, what communication problems do you encounter because of your voice problem?; 2) In your job or study, what communication problems do you encounter because of your voice problem?; 3) In social communication, what communication problems do you encounter because of your voice problem?; and 4) How does your voice problem affect your emotional state?

2. Three minutes were given for the participants to generate and write down ideas

and responses independently.

3. Round-robin “public” recording was used in eliciting responses from participants.

Under this recording approach, the investigator went around the table and asked for one idea from one participant at a time. This was to ensure each participant was given an equal opportunity to respond. The facilitator recorded all the responses generated by each participant on the board.

4. The group discussed on each response for clarification and elimination of redundant or identical responses.

5. Finally, participant selected the five most important ideas and ranked them. The facilitators recorded the ranking of each participant. This offered the opportunity for particularly important responses to be highlighted. The most important item ranked by each participant was given a score of 5. The second most important item was given a score of 4 and the least important item was given a score of 1.

The sum of these scores from all participants then formed the “Relative Importance Score” which indicated the relative importance of the items.

The same process was repeated in the clinician group. In the clinician group, three nominal group meetings, with three subjects in a group, were conducted in a quiet room at a private clinic and at the Prince Philip Dental Hospital.

Data Analysis

The audio samples from the dysphonic group 1 and 2 and the clinician group were analyzed. All the responses regarding the voice-related communication difficulties from the subjects were listed out. First, the investigator assigned each communication difficulty to one of the two types of “general” or “specific” situations. General situation was defined as (i) a general situation (e.g., during social activities, in daily communication, etc); (ii) a communication difficulty that could present in a number of domains (e.g., “Talk less” was a communication effect in social context or daily communications). Specific situation was defined as (i) a specific example of a general situation (e.g., “Going to Karaoke” was an example of social activities); (ii) having concrete description of the effects or difficulties (e.g. “Feeling frustrated” was a concrete description of his/her psychological state). Second, the lists of the situation responses were further analyzed by assigning each communication situations to one of the four domains of daily communication, job, social communication or emotion, thus comparing the relative proportions in each domain for each list. Third, relative importance scores in the four domains rated by the subjects in the three groups were calculated.

Inter- and intra-rater reliability

Among the seven sets of data from the three groups, four sets of data were chosen randomly (Set 1 data). The investigator assigned the situations in the four sets

of data into general and specific categories again after two weeks (Set 2 data) to perform intra-rater reliability.

One final year speech pathology student was recruited and was informed about the definition of general and specific situations. Then, he was asked to assign the situations in Set 1 data and Set 2 data into general and specific categories to perform inter-rater reliability.

RESULTS

Comparison of the number of situations generated and the relative proportion of general and specific situations

Table 1 summarizes the number of situations generated by the three groups of subjects.

Comparisons among the three groups' communication situations revealed that dysphonic group 2 and clinician group generated similar number of situations.

Dysphonic group 1 produced the greatest number of generated situations.

Table 1. Summary of the situations generated in dysphonic groups and clinician group

	Dysphonic group 1	Dysphonic group 2	Clinician group
Total no. of situations generated	80	59	64
No. of general situations generated (Percentage)	22 (27.50%)	13 (22.03%)	14 (21.88%)
No. of specific situations generated (Percentage)	58 (72.50%)	46 (77.97%)	50 (78.13%)

Figure 1 shows the comparison of the relative proportions of general and specific situations in dysphonic group 1, dysphonic group 2 and clinician group. The comparison revealed that all the three groups produced more specific situations than general situations. They all produced specific situations at least 45% more than general situations. Comparisons of the pattern in generating general and specific situations among the three groups revealed similarity of proportions of general and specific situations between two dysphonic groups and between clinician group and either of the dysphonic groups.

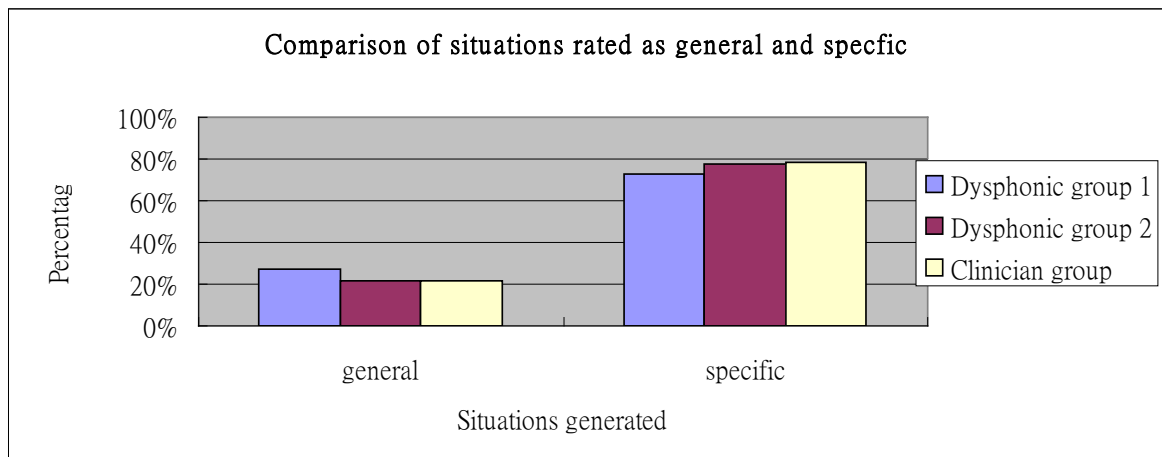


Figure 1. Comparison of relative proportion of general and specific situations generated in the three groups

Comparison of relative proportions of situations in different communication domains in three groups

Clinicians generated more situations related to job or study and social communication than did dysphonic patients, at the expense of daily communication and emotion (Figure 2). Although this difference was not significant; the trend clearly indicates that the dysphonic patients focus on daily communication and emotion more frequently than was estimated by clinicians. Comparisons of the distribution of situations in different domains among the three groups' communication situations revealed more similarity between the two dysphonic groups than between clinician group and either of the dysphonic groups. In the other words, clinician group generated situations in the four domains with average proportion. Rather, the pattern of relative proportion in different domains from dysphonic group 1 and 2 are similar with higher proportion in daily communication and emotion but lower proportion in job and social communication.

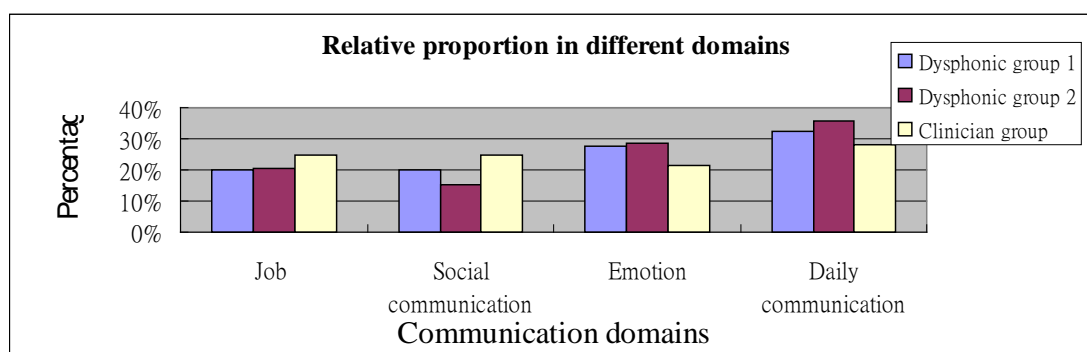


Figure 2. Comparison of relative proportions of situations in different communication domains in three groups

Comparison of the relative importance percentage in different domains rated by the three groups

Figure 3 showed that clinicians rated daily communication much less important than did dysphonic patients, whereas they rated social communication and emotion slightly more important than did dysphonic patients. In addition, dysphonic groups rated job or study less important than clinicians. Comparisons of relative importance scores in different domains rated by the three groups revealed more similarity between the two dysphonic groups than between clinician group and either of the dysphonic groups. Comparing the pattern of the relative importance score in different domains, the three groups demonstrated similar trend with daily communication having the highest relative importance score and then emotion, social communication and job.

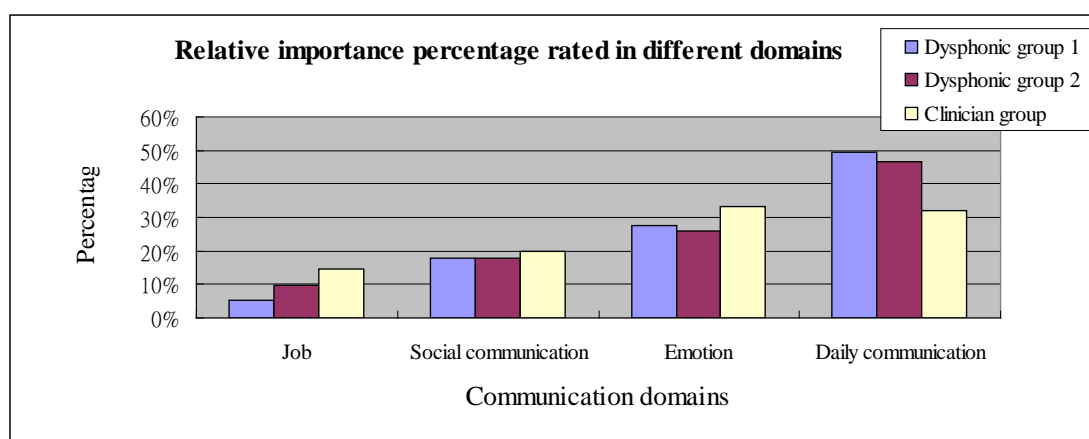


Figure 3. Relative importance scores in different domains rated by the three groups

Inter- and intra-rater reliability

Since the data analysis is a subjective process, the reliability of this process needs to be established. Set 1 data constituted of 4 lists of communication situations generated by dysphonic groups and clinician group. The 4 lists were chosen randomly and rated by the investigator on general and specific situations primarily. Set 2 data was the same 4 lists of communication situations but rated by the investigator on general and specific situations secondarily after two weeks. Intra-rater agreement compared set 1 and set 2 data rated by the investigator. Inter-rater agreement compared set 1 data rated by the investigator and the data rated by the rater. It also compared set 2 data rated by the investigator and that rated by the rater. The agreements shown in Table 2 were all over 85% which can be considered as high.

Table 2. Inter- and intra-rater agreement in the judgment on general and specific situations

Agreements	Agreed specific / general situations	Percentage of agreement
Inter-rater agreement		
Rater – Set 1 data	96 / 18	89.76 (114 / 127 situations)
Rater – Set 2 data	95 / 17	88.19 (112 / 127 situations)
Intra-rater agreement		
Set 1 data – Set 2 data	106 / 21	94.49 (120 / 127 situations)

DISCUSSION

The present study explored the first-hand information from dysphonic individuals about their perception of voice-related communication difficulties. The

study also compared perception on voice-related communication difficulties between dysphonic patients and clinicians. The following discussed the findings of this study:

Relative proportions of general and specific situations

The results revealed that all the three groups of subjects reported significantly more specific situations than general situations. Surprisingly, clinicians were able to produce specific communication situations with concrete examples. This finding did not support the hypothesis that patients would generate more specific communication situations than clinicians. For example, clinicians suggested that people could not hear what dysphonic patients say in noisy environments such as markets or restaurants. They could also suggest specifically what communication difficulties that teachers, sales or singers with voice problems would face. For example, voice problem may affect singers' performance or self-confidence. Therefore, clinician-generated situations can be representative of patient values. And it is believed that clinicians with experiences in assessing and treating dysphonic patients are competent in valuing dysphonic patients' quality of life. The results could be attributed to the growing availability and popularity of voice-related quality of life measures in these few years such as Voice Handicap Index (Jacobson et al., 1997), Voice Activity and Participation Profile (Ma & Yiu, 2001), etc. These quality of life measures allow clinicians to assess patients' functional aspects effectively and clinicians could get a

sense on what functional communication difficulties dysphonic patients would face specifically.

Exploring dysphonic individuals' communication difficulties in different domains

Findings of the present study revealed that patients generated most situations in daily communication and emotional state. This indicated that the majority of dysphonic individuals encounter voice-related communication difficulties frequently during daily communication. They are concerned about the voice activity limitation and participation restriction related to daily communication. For example, a housewife concerns about the difficulty in getting her messages across clearly in daily communication because of her voice problem (voice activity limitation) and she would refuse to talk or talk less in daily communication (participation restriction). Such voice activity limitation and participation restriction would bring about negative emotional states such as frustration, low self-esteem, etc. For example, a teacher who cannot raise his/her voice when teaching in class, such limitation would bring about stressed, upset and frustration. If he/she has to change the job due to the voice problem, such restriction may lead to further worries. The results also suggest that the psychological impacts of voice disorders should not be under-estimated.

When compared to dysphonic subjects, clinicians in the present study generated more situations related to job and social communication, at the expense of daily

communication and emotion (See Figure 2). Clinicians reported situations in relatively average proportion among the four communication domains. This suggests that clinicians' concerns spread evenly among the four communication domains.

Relative importance scores in different domains

Findings of the present study partly supported the hypothesis that the dysphonic patients and clinicians would rate differently in the relative importance of the four communication domains. The results revealed that clinicians rated daily communication much less important than did dysphonic patients. This result supported the previous assumption that clinicians may underestimate dysphonic patients concern about daily communication. It is believed that dysphonic patients, whatever what their career are and how old they are, they encounter much communication difficulties in daily communication because of they voice problem and that is what they concern most.

The results also revealed that dysphonic groups rated job less important than clinicians did. This could be explained by the distribution of career of the dysphonic subjects. In dysphonic group 1 and 2, there were four and two employed subjects. Among these six employed subjects, only three of them are teachers and the other three employed subjects work with banking, driver and worker. It is believed that among these kinds of career, only teaching job is greatly related to their voice activity.

It is because teachers need to use their voices frequently during class and they may need to shout at children or speak loudly in a big class. This teaching job plays a great role in their voice activity and may become the contributing factor to their voice problem. What is more, their resulted voice problem may further influence their career. For example, a music teacher, having voice problem, could not sing at high pitch. S/he may not be competent to be a music teacher anymore. S/he may need to change his/her job. Therefore, dysphonic patients may encounter great communication difficulties in their jobs, provided that their jobs depend much on voice use. Therefore, the reason why dysphonic groups rated job or study much less important than the other domains is because most of the dysphonic patients' career are not greatly related to voice activity. For example, a general factory worker or driver with voice disorders did not encounter many voice-related communication difficulties due to their voice problems in their careers as their careers are not voice-dependent. Another reason for the low importance score in job or study is that having communication difficulties due to their voice problem is not a big issue in most of the students. Although the students participated in this study were university students, they seldom participate in voice-related projects. They may need to do presentation in front of the class as the assessment for that semester twice a year. The majority of work in a university student depends on independent written work. Therefore, dysphonic students may not

encounter much communication difficulties during study and voice-related communication difficulties did not affect the dysphonic subjects' studying much. And thus, this domain was rated as the least important relatively.

Despite of this, the result revealed that clinicians and dysphonic individuals produced similar trend in rating importance in the four communication domains. The trend was that they all rated daily communication and emotion as the first two most important domains, followed by social communication and job. This trend suggested that clinicians' and dysphonic patients' perception on relative importance in the four communication domains are matched and clinician's perception could briefly reflect patients' communication needs.

The representativeness of the situations generated by dysphonic groups

Both dysphonic group 1 and 2 generated a substantial number of voice-related communication situations and they produced similar relative proportion of general and specific situations. Furthermore, both groups generated similar relative proportion of situations and rated for the importance scores similarly in daily communication, job or study, social communication and emotion. The comparability of the independently generated lists from the two dysphonic groups suggests that the use of this technique with just a single group would produce quality-of-life items that are generalizable across most dysphonic individuals. This finding supports Lomas et al. (1987) that the

technique could be applied to the development of quality-of-life measures for any other disease group.

CLINICAL IMPLICATIONS

The present study reveals that: (1) daily communication and emotion are the most affected domains in dysphonic patients; (2) dysphonic patients rated daily communication as the most important domains. This poses certain implications on clinical management in voice disorders.

The final goal of health care is to maximize functions in daily activities and to achieve a better well-being. Results from the study could contribute to application of functional approach in clinical management of voice disorders. The lists of specific situations generated by the dysphonic patients in this study could be used as materials for prioritizing treatment goals. From the view of functional approach, patients can choose in which situations they want to improve due to voice problem by using the lists of specific situations in daily communication and emotion. Clinicians then can provide appropriate tailor-made voice therapy or emotional counseling.

LIMITATIONS OF THE PRESENT STUDY AND FURTHER STUDIES

There are several limitations in the present study which need to be evaluated.

First, the diversity of the dysphonic subject background was limited. Thus, the situations generated by these two groups may be limited in the particular background such as students and housewives which resulted that the information may not be fully representative. Second, the subject size in this study was relatively small. Thus, further research can be done targeting on maximum variation sampling by using a larger subject pool ($N > 50$), with more subjects in each dysphonic category and with greater diversity of subject background.

CONCLUSIONS

Voice disorders can lead to significant impact on one's quality of life. Nowadays, there is growing importance on using functional approach in treating dysphonic patients. However, there is no existing literature studying dysphonic patients' first-hand information about their perception of voice-related communication difficulties. The present study explored dysphonic individual's perception of voice-related communication difficulties and comparing clinicians' and dysphonic individual's perception of communication difficulties.

Results from the study highlighted the fact that dysphonic patients encounter more communication difficulties in daily communication and emotion. Considering functional approach in treating dysphonic patients, this information is useful for

clinical management in which patients could choose their particular communication difficulties for further management.

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APPENDIX 1

有聲線問題的人覺得在日常生活溝通上, 工作上, 社交溝通上及情緒上經常遇到溝通上的困難:

日常生活溝通上

1. 減少說話的次數同時間
2. 經常要重覆講多次
3. 發音時比較辛苦, 用力, 容易疲倦, 影響溝通
4. 令人哋誤會我發脾氣, 好粗魯
5. 人哋經常聽唔到我講的說話
6. 減少在噪雜的地方講說話

工作上

1. 教學質素不太好
2. 工作時候, 好少發表自己的意見
3. 影響工作效率

社交溝通上

1. 因為太細聲, 容易被人忽略
2. 減少出席社交活動, 例如: 唱歌, 飲酒
3. 在社交活動上, 缺少魅力

情緒上

1. 擔心惡化
2. 焦慮, 暴躁
3. 唔想多講說話
4. 受到批評, 覺得唔開心, 唔舒服
5. 無信心, 自卑