Relationship Between Assertion Types and Communication Channels of Nursing Organization at University Hospital: Communication Data from Electronic Sensors

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The purpose of this study is to obtain a perspective of the communication objectively and analyze the relationship between assertion types and interpersonal communications in a nursing organization of a university hospital. To promote the communications, assertive communication which enables self-expression attracts attention recently. However, in the previous studies of the assertion and communication in the context of nursing organization, it cannot be regarded that the study of this field was clarified scientifically although a few studies exist to clarify the relation with practical communication. Therefore, this study visualizes the communication channels scientifically with electronic sensors and is to clarify how the index influences them with the type of assertion. Participants of this study were 26 nurses in a maternity ward of a university hospital. Measures of this study were electronic sensors and questionnaires. The electronic badges, developed by MIT and applied by Health High-Technologies Corporation in Japan, are used for measuring the communication channels and social signaling behavior of nursing organizations in university hospitals. The results were the communication time of the nurses who had high assertive scores was concentrated in the middle area and the communication time of the nurses who had high passive aggressive scores was relatively low. In the communication signaling, one characteristic was if we analyze the communication time of connecting each nurse, we can see that the nurses with high assertive scores and the nurses with low assertive scores spend a lot of time communicating within their own group. The results of these characteristics show that there is a connection between assertion types and the amount of communication time and the connection of communication channels.

Key words: assertion type, interpersonal communication channel, electronic sensor, nursing organization, wearable sensing device

Introduction

Chester Barnard stressed the importance of communications for the activation of the organization. In his theory of organization study, communication occupies a central place. The quality of the communication is the key to success of the organizational vitalization. In the medical circumstances, communication is directly connected with the health of patients. To promote the communications in the nursing organization, assertive communication which enables self-expression has attracted attention recently. Assertive is one type of assertion and there are four types: assertive (AS), non-assertive (NA), aggressive (AG) and passive-aggressive (PA). The concept of assertion was developed in America in the 1970s period of self-expression and more recently DeGiovanni...
advocated a two dimensional model\textsuperscript{(2)} (e.g. Figure-1). According to Hiraki N, assertive communication is difficult for Japanese nurses. This occurs in the following context; Hiraki N mentions that Japanese nurses has a strong feeling of wanting to be useful to other people and putting the rights of patients before their own as well as having a desire to be sympathetic and kind. Therefore the Japanese nurses think that it is not good to have negative feelings to patients and they suppress their own feelings\textsuperscript{3)-7)}. From such a background, there are many previous studies in conjunction with assertion of Japanese nurses. However, in the previous studies of the assertion and communication in the nursing organization, they mainly used questionnaires, interviews and video cameras. Although few studies exist to clarify the relation with practical communication scientifically\textsuperscript{8)}, there are not enough to acknowledge evidence-based outcomes. Therefore, this study visualizes the communication times and communication channels of the nursing organization scientifically with an electronic sensor which was developed by MIT and applied by Health High-Technologies Corporation in Japan and are used for measuring the communication channels and social signaling behaviors of nursing organizations in university hospitals. Further, we clarified how the index influences them with the type of assertion which obtained the data of questionnaires by “Rathus Assertiveness Schedule: Japanese version\textsuperscript{9)”. We did a pilot study at a psychiatric ward in university hospital. There is a clear pattern showing in the results. The nurses who had high assertive scores were concentrated in the middle area of interpersonal communication time. On the other hand, the high passive-aggressive group tended to be near the top. Because of these results, we repeated the study in a maternity ward using exactly the same method and evaluation criteria. As the result, we obtained not only similar but also, opposite results as well as new results between assertion types and interpersonal communication.

\textbf{Purpose}

The purpose of this study is to obtain a perspective of communication scientifically with electronic sensors and analyze the relationship between assertion types and interpersonal communications in nursing organization of university hospital.

\textbf{Methods}

1. Participants

This research was carried out in one unit of a maternity ward consisting of 26 nurses. In addition to these nurses, we recruited the senior nursing officer of the university hospital. Through the informed consent procedure, a total of 26 nurses (midwife = 21, nurse = 5) agreed with this study (response rate = 100%, cover rate = 100%). The 26 participants consisted of three administrative nurses including one nursing divisional manager and two nursing chief managers and twenty-three staff nurses. Moreover, they were full time workers. The mean age was 31 (SD=±6.1) yrs. old.

2. Materials

This study has two materials, firstly, electronic sensors, developed by MIT\textsuperscript{10) 11)} and applied by Hitachi High-Technologies Corporation in Japan are used for measuring the communication channels and social signaling behavior of a nursing organization in university hospital. In detail, electronic badges capable of detecting face to face interactions, conversations, body movement and physical proximity are introduced in order to measure the organizational communication. Participants put on electronic badges (wearable sensing devices) for measuring the communication time at nursing organizations, including formal and informal scenes (nursing station, birthing room, newborn nursery, consultation rooms, hallway and staff rooms) during working hours (e.g. Figure-2). Second, we carried out a questionnaire survey.
which is “Rathus Assertiveness Schedule: Japanese version” at the same time. This scale has four subscales, assertive (AS), non-assertive (NA), aggressive (AG) and passive-aggressive (PA). Factor of each subscale defined as follows.\(^{3,9}\)

**Assertive (AS):** It is the expression method where a person can say their opinions and thoughts appropriately according to the situation. It is considered good as the person does not waver and makes sure others understand what they want to communicate (self-affirmation/others affirmation).

**Non-assertive (NA):** This type does not express their opinions and thoughts clearly and they talk in a way that others do not understand. This type of expression has a tendency to result in an unpleasant experience because their thoughts and feelings are not conveyed and there are negative implications (self-abnegation/others affirmation).

**Aggressive (AG):** This type of expression insists on expressing their thoughts and feelings clearly, but they push themselves and are too intense. They are unconcerned about the existence and the behavior of others, and persist in their opinion. This type of person shouts at others and blames them and ignores certain things and is selfish (self-affirmation/others negation).

**Passive aggressive (PA):** This type of self-expression is negative and aggressive, in other words, this type does not attack directly or straight to other people, but is an expression method with bad implications attacking by an indirect method (self-abnegation/others negation).

3. **Survey period**
   2 weeks in March of 2015.

4. **Analytical procedure**
   1) Divided questionnaire results of each assertion type into 3 levels; high, middle, and low.
   2) Used the data of inter personal communication times of 120 min/day or more.
   3) Analyzed the relationship between each assertion type and amount of communication time and the interpersonal communication channel.
   4) Compared the results with the pilot study results.

**Results**

We obtained some characteristics showing that there is a connection between assertion types, the amount of communication time and the connection of communication channels as follows.

1. **Average interpersonal communication time per person/day**
   We needed to consider one important thing before analyzing the results about amount communication time. We decided not to include the result of “mid (6)* in 3, 4 figures” who has the lowest communication time due to the irregularity of her duty because of her health condition. Bearing this mind, the results show that the communication time of the nurses who had high AS scores was concentrated in the middle area and this was almost identical to the results of the pilot study. However, nurses who had high PA scores were relatively low in this study even though there was the opposite result in the pilot study (e.g. Figure-3, Figure-4).
2. Communication Channels

The average time per day (minutes) at which the nurses of the university hospital spent on face to face communication was divided into 30 minutes, 60 minutes, 90 minutes and 120 minutes interval units per day. Communication channels became clearer and more individual. In other words, the longer the time, the clearer the communication channel was. Besides, the key person in the organization became clear in the time unit of 120 minutes (e.g. Figure-5). In the communication channels, one characteristic was if we analyze the communication time of each nurse from the figures, we can see that the nurses with high assertive scores and the nurses with low assertive scores spend a lot of time communicating within their own group (e.g. Figure-6).

Discussion

As mentioned above, there are four types of assertion and we analyzed them according to each type. It is shown that we cannot categorize the personality clearly in only one type. Each person has a combination of types. However, it can be said in general, each of them has a variety of assertion types individually. In this study, we found the nurses with a high assertive score don’t communicate a lot in their nursing organization. There may be a possibility that the nurses with a high assertive score communicate efficiently in their work. Previous study showed that assertion training which can have a confidence and increase communication skills works effectively for Japanese nurses[3, 6, 7]. Moreover, they reported that the assertive score of the nurse who had training increases[12]. If the nurses’ assertive score increases, it not only lowers
Figure 5  Interpersonal communication channel in nursing organization of the maternity ward

Figure 6  AS (high middle low) distribute in "communication time > 120 min/1 day"
their stress but also makes more time. In addition, we should point out that one nurse who had a high AS score was the chief of the organization. According to the pilot study, the nursing manager spends much more time on communication than other nurses. This result is similar to the pilot study. This shows that the assertion type is not as influential as the type of job a person does. For example, they receive and in part information, discuss matters, negotiate, etc. Clearly, managers need to spend more time communicating with others. Moreover, the pilot study (psychiatric ward) nurses with high AP scores communicate with others a lot. On the other hand, we found the opposite result in this main study (maternity ward). Therefore, we are planning to investigate these differences further using face to face interviews. The limitation of this study is that the implications are from only a quantitative analysis. We should investigate the meaning and causes of these results. It will be necessary to investigate more wards as control groups. The results of this study may give some suggestions for an evaluation of practical communication. Moreover, it is not only for the nursing organization but also other organizations building strong teams.

References