Physiotherapy in Stroke Rehabilitation: A Comparison of Bases for Treatment between Japan and Sweden

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Abstract. Questionnaires were posted to 220 Japanese physiotherapists to investigate on what their choice of treatment was based for stroke clients and to compare these results with those from Sweden. As in Sweden, the respondents attached most importance to ‘hands-on’ experience working with clients and to participation in practical courses in which they learned various techniques. Among the treatment methods taught during the respondents’ basic training, only Bobath’s method commonly continued to be used after graduation in both countries. Asked to treat a client with right hemiparesis, the majority of Japanese respondents chose functionally meaningful movement of the right side, whereas the Swedish respondents preferred weight bearing on the affected side. The attitude of physiotherapists towards new methods of treatment revealed that 77% of the Japanese respondents and 91% of those in Sweden were interested. This could imply that Japanese physiotherapists are already satisfied with their choice of treatments and are not looking for new approaches to treatment. It appears that it takes more time for foreign-developed methods to be introduced and accepted in Japan than it does in Sweden. This suggests that the availability of post-registration courses on newer approaches to stroke management may be limited in Japan.

Key words: Stroke rehabilitation, Survey, Physical therapy.

(INTRODUCTION

Over the past 30 years various physiotherapy treatment methods have been developed for stroke clients. These methods include proprioceptive neuromuscular facilitation (PNF)\(^1\), Brunnström\(^2\), Bobath\(^3\), Johnstone\(^4\), and Davies\(^5\) Techniques. All but the PNF technique have acquired the name of their originators rather than being named after the principles of treatment. Recently in Sweden, a survey was conducted by Nilsson and Nordholm\(^6\) to find out on what the physiotherapy treatment methods were based for stroke clients, the results of which were: 1) experience of working with clients was considered as most important from the physiotherapists’ present view of treatment, while basic physiotherapy training, theory and literature were considered less important; 2) detailed descriptions of the treatments for the stroke clients were common among the respondents, whereas the theoretical explanations for their selected method(s) of treatment were more vague, and 3) an open attitude to change and the introduction of new methods of treatment was evident among 75 per cent (%) of the respondents. One possible explanation for these results could be that physiotherapists are still dissatisfied with the results from the techniques currently available.

In order to investigate how Japanese physio-
therapists’ perspective and approach would be on this matter a similar survey was conducted, and this was modelled on the above survey. The aim of this survey was to investigate: 1) physiotherapy treatment strategies in Japan; 2) on what the physiotherapists’ choice of treatment was based, i.e. pathology, neurology, etc.; 3) the physiotherapists’ attitudes to the introduction of new methods of treatment for stroke clients; and 4) to compare the results with those of Sweden. To make a valid and reliable comparison between Japan and Sweden the method used in the Nilsson and Nordholm’s survey was strictly followed. It is extremely important that the physiotherapist bases his/her treatment in the care of a stroke client on the underlying neurological changes that pathology brings about, so that he/she works intelligently with scientific bases.

METHOD

Subjects
In order to obtain a number of respondents equivalent to that of the Nilsson and Nordholm’s survey the author first referred to the Proceedings of the Japanese Physical Therapy Association (JPTA) Congresses over the past nine years and selected 107 (48.6%) physiotherapists who had presented research papers on this topic and, then, consulted the JPTA Member List of 1991 and selected the remaining 113 (51.4%) from those who were working in acute care settings and rehabilitation centres where stroke clients were most likely to be treated by physiotherapists. Specifically, these institutions were chosen by their order of listing from each of the 48 prefectures, and the first physiotherapist listed at each institution was taken as a respondent. Sampling was done in such a way that the seven major regions of Japan, namely Hokkaido, Tohoku, Kantō, Chubu, Kinki, Chugoku/Shikoku and Kyushu/Okinawa were generally represented, and, as a result, 23, 22, 47, 38, 31, 26 and 33 respondents were allocated to each respective region giving a total of 220 physiotherapists.

The rate of return was 67.3% (148 respondents), from which five incomplete questionnaires were excluded from analysis, and 100 (45.5%) of which were returned before the mailed reminder and 48 (21.8%) after it. Thus, the final sample consisted of 143 (65.0%) respondents who had qualified as physiotherapists between 1970 and 1991, which was comparable with Sweden’s 128 (60%) respondents. The respondents had worked with stroke clients, on average (SD), for 9.9 (5.77) (vs. 11.0 ± 7.30 in Sweden) years, approximately half of them in acute care and the rest in rehabilitation and geriatric settings.

Questionnaire
The questionnaires consisted of 14 (see Appendix) out of 16 questions Nilsson and Nordholm used in their survey. The two questions omitted concerned: 1) returning the questionnaire in case of no experience of treating stroke clients; and 2) the place where the respondent completed their basic training as physiotherapists, which the author considered irrelevant for this survey because only the physiotherapists with experience of treating stroke clients were targeted as respondents. All the questions were translated from English into Japanese. The questions concerned physiotherapy education, length and extent of experience in working with stroke clients, factors which might have influenced the current view of treatment and attitudes towards new treatment strategies. A letter explaining the purpose of the study accompanied the questionnaire as well as a stamped addressed envelope. The questionnaires were anonymous but contained a code for the purpose of issuing mailed reminders. This code was removed upon receipt of the questionnaire.

RESULTS AND DISCUSSION

Physiotherapy training for treatment of stroke
The majority (73%) of respondents qualified as physiotherapists between the years of 1978 and 1988 (Fig. 1). There was a 14-year difference in the peak median years for the completion of physiotherapy education in Japan and Sweden; i.e. between the years of 1966 and 1988 vs. between the years of 1950 and 1988. The first physiotherapy school in Japan opened in 1963. Out of 90 respondents, 40 (44.4%) were taught the Bobath method, 26 (28.9%) Brunnström, 17 (18.9%) PNF and 3 (3.3%) the Davies method during their training. No respondent was taught the Carr and Shepherd method which is, as yet, not well known in this country (Fig. 1). It takes more time for new methods to be introduced into Japan than to Sweden because of the absence of foreign-
trained physiotherapists working in hospitals and the Japanese' apparent lack of opportunity to communicate in foreign languages. Contrary to the Swedish respondents, there was not a clear relationship between year of physiotherapy education and treatment method taught except for the Davies method which was dominant during the 1980's (Fig. 1). This may be due to the fact that there were already some treatment methods available by the time physiotherapy education began in Japan.

After completion of their basic training, a total of 67% of the respondents had participated in postgraduate courses for stroke rehabilitation of varying duration. As in Sweden, courses in the Bobath method were singled out by the respondents as being important, since this method was seen in Japan as being rational, logical and a new way of looking at the patient as a whole.

Factors influencing choice of treatment

As in Sweden, the respondents attached most importance to practical courses and experience working with clients, though the importance of further education regarding theory was higher for the Japanese physiotherapists (Fig. 2). However, physiotherapy is still considered a practical profession in both countries. In Japan, stimulation from colleagues was of least importance, whereas, in Sweden, it was the third in importance. This can be explained by the fact that, in Sweden, informal as well as formal discussions among physiotherapists may be frequent, but it is rare in Japan because we lack a peer review process and in-service education after attending courses is not required. The fact that basic physiotherapy training came lowest in rank for influencing treatment may be disappointing to some of the instructors in physiotherapy schools. However, basic training should give a solid foundation of anatomy, pathology, kinesiology among others on which various techniques studied at post-graduate courses can be based.

Treatment strategies

Asked to treat a hypothetical client with right hemiparesis, 57% of the Japanese respondents would use functionally meaningful movement of the right side, whereas the Swedish respondents preferred weight bearing on the affected side. While 15% of the Swedish respondents chose motivation, with the reason for this being to establish principles of motor learning, the Japanese respondents did not mention motivation at all. Instead, they stated that the client’s motivation would be improved through training of functionally meaningful movement, with the other aim being to improve the client’s activities of daily living (Fig. 3). The Swedish respondents’ reasons for choos-
ing functionally meaningful movement were to stimulate motor function, body awareness and symmetry and to normalize muscle tone. There is a strong possibility that the Japanese respondents chose functionally meaningful movement as the most preferred method because of the necessity for the client to re-establish the Japanese way of daily living, i.e. standing/sitting to/from a straw matted floor. Thus, it is interesting to note the difference in the reasons for treatment between Japanese and Swedish respondents, even though both chose one particular treatment method such as functionally meaningful movement. A few respondents did not answer this question because no information was given on higher cortical function as well as the client’s trunk function which are of special interest to some Japanese physiotherapists.

As to the theoretical basis for choice of treatment, respondents did not elaborate in their answers, but 22.5% (vs. 20.0% in Sweden) of them had continued to use the Bobath method since graduation (Fig. 4). In general, according to the survey results, Japanese physiotherapists tend to pursue one particular method, whereas a combination of various treatment methods/school is preferred by the majority of Swedish physiotherapists. Fifty per cent of the answers to the theoretical basis for choice of treatment were invalid since the respondents avoided answering this question as directed. The reason for this may be
that, as in Sweden, the respondents placed practical experience and the results they got from them as the most important determinant of their preferred method of treatment.

Efficacy of treatment was evaluated by the modified version \(^8\) of stage of motor recovery by Brunnström, movement analysis, and activities of daily living and satisfaction of the patient and family, of which the first method was almost exclusively used. Tests of motor function according to Fugl-Meyer, Lindmark or Carr and Shepherd were not mentioned at all. These findings suggest that Japanese physiotherapists may have a more collective way of thinking regarding assessment and treatment of stroke clients compared to a more individualistic approach by Swedish physiotherapists using various methods of treatment.

The frequency of reading professional literature on stroke is shown in Fig. 5. The most popular book cited was the translated version of Patricia Davies’ on Bobath’s concept. The Japanese authors cited were Nakamura\(^9\), Fukui\(^10\), Futagi\(^11\) and Uyeda\(^8\). Contrary to the Swedish respondents, no respondent cited the book by Carr and Shepherd, the second edition of which was published in 1987 and was translated into Japanese four years later, which may be another reason for why it takes more time for new approaches to be introduced into Japan.

**Attitudes towards new method**

Response to a proposed hypothetical post-registration course with instruction by Carr and Shepherd revealed 25% of the respondents very interested, which was one third of that of the Swedish respondents (Fig. 6). Approximately, a quarter (35) of the respondents did not know Carr and Shepherd. The number of very interested might have been larger if these two authors had been more widely known.

Regarding the timing of when the respondents considered it appropriate to change the method of treatment, the representative answer was when treatment was effective/ineffective. Some of the difficulties a minority of respondents encountered when changing their clients’ treatment program included insufficient time and lack of space and equipment which were also mentioned by a few Swedish respondents. These factors may be due to the smaller percentage of qualified physiotherapists in Japan and the lack of an appointment system at many hospitals, together with a limitation of space available to the physiotherapy department in smaller hospitals. There were 120 factors other than the ones already dealt with which influenced the respondents’ view of treatment, the major ones being the client’s physical and mental condition, attitude of the patient’s family and the social circumstance they were in, and the limitation of the health services regarding cost, follow-up and home care.

In conclusion, as expected, there were many similarities between Japan and Sweden regarding treatment of stroke patients. However, there were
also some differences which were possibly due to the diversity of culture and/or health care system of the two countries. It is hoped that a treatment method will become available so that results will be universally compatible no matter which physiotherapist handles the stroke client.

REFERENCES


Appendix

Questionnaire regarding physiotherapy in rehabilitation of stroke clients

1. In which year did you complete your basic training as physiotherapist?
2. Which method for stroke treatment were you taught in your basic training? (Choose only one alternative)
   • Bobath
   • PNF
   • Davies
   • Carr and Shepherd
   • Brunnström
   • Other
3. How many years of experience of treating stroke clients do you have?
4. Within which type of care have you worked with stroke clients?
   • Acute care
   • Nursing home
   • Rehabilitation unit
   • Other
5. Can you estimate the number of weeks you have taken part in continuing education about the treatment of stroke clients?
6. Can you list one course which has meant more to your work with physiotherapy treatment than other course?
   • Why
7. Approximately how often do you read the professional literature on stroke?
   • Every week
   • About once a month
   • Rarely
   • Never
8. List at most three books which in your opinion are the best in explaining physiotherapy treatment for stroke clients.

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9. How important for your current view of treatment do you consider the factors listed below? Please place in order (1=most important)
   • Experience through working with clients
   • Continuing education concerned with practice
   • Continuing education concerned with theory
   • Influence (stimulation) from other colleagues
   • Professional literature
   • Basic physiotherapy training

10. Imagine that you are going to explain to a colleague how you treat a stroke client.
    • Case:
      The client is a woman in her 70s, who was afflicted with right-sided hemiparesis a month ago. She has impaired motor function in her right arm and leg. She is slowly recovering her motor functions except in her hand. She can elevate her right arm with a slight flexor synergy to a horizontal position. Weight bearing on the affected limb is possible for short periods of time, and she is able to walk a few steps with assistance.
      (a) What would be your first choice of physiotherapy treatment and why?
      (b) How would you describe the theoretical basis for your choice in view of your current thinking about physiotherapy and the treatment of stroke?
      (c) How would you evaluate the effect of your treatment?
11. Suppose that Carr and Shepherd are coming to Japan in 1993 to give courses in stroke treatment and that resources are available for you to participate. How interested would you be in participating?
   • Very interested
   • Rather interested
   • Not at all interested
   Please explain your answer.

12. Which opportunities or difficulties do you imagine when it comes to changing your treatment methods in practice?
   • Opportunities:....................................
   • Difficulties:....................................

13. Are there any factors other than the ones dealt with so far which might have influenced your view of treatment? If so, which factors?

14. If you have some comments on this questionnaire or the topic it deals with, please share these with us.

   Thank you for your participation.