

Knowledge of Physiotherapy: A Study of Ishikawa High School Students

SHIMPACHIRO OGIWARA, RPT, SRP (UK), ONC (UK), MCPA (C), BPT (C), MA (USA), PhD (USA)¹⁾,
MASAFUMI NOZOE, RPT, BHSc²⁾

¹⁾*Division of Rehabilitation Science, Department of Health Sciences, Graduate School for Health Studies, The University of Kanazawa:
11-80 Kodatsuno 5, Kanazawa, Ishikawa 920-0942, Japan.*

TEL +81 76-265-2616 FAX +81 76-234-4351 E-mail: oggy@mhs.mp.kanazawa-u.ac.jp

²⁾*Department of Medical Rehabilitation Services, Medical College of Hyogo Shinoyama Hospital*

Abstract. OBJECTIVE: To investigate how senior high school students' knowledge of physiotherapy is acquired and their possible view of physiotherapy as a career. DESIGN: Cross-sectional survey. SETTING: Two non-vocational senior high schools in Japan. PARTICIPANTS: Six hundred and twenty-three students with a scholastic deviation value of more than 60. METHODOLOGY: A questionnaire in a closed-question format was used to survey the students' accuracy of knowledge and sources of information about physiotherapy. MAIN RESULTS: The science students and healthcare-aspiring students were more knowledgeable about physiotherapy compared to the literary and non-healthcare aspiring students with a mean score of 4.3, ranging from 0 to 11. *Instruction in exercises* (51%) was shown to be the most accurate, and *intensive therapy* (6%) was the least accurate. *Television, one's own experience as a client, and career literature or pamphlets* were the most cited sources of information. DISCUSSION AND CONCLUSION: Only half of the 619 students were aware of physiotherapy. This is partly due to the fact that the profession of physiotherapy has become commonly regarded as medical rehabilitation instead of one of the branches of therapeutics. Eighty-five per cent of the respondents indicated their aspiration to have a career, so acquisition of appropriate information on careers during high school days is important. Therefore, knowledge of physiotherapy conveyed by physiotherapists and the mass media to senior high school students should be improved in its accuracy of content.

Key words: High school students, Career decision-making, Physiotherapy, Profession

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INTRODUCTION

Information about various occupations and professions is an important factor when making one's future career choice¹⁾. Although the time for career decision-making varies amongst individuals, it is usually made during early or late adolescence²⁾. However, many high school students still lack appropriate information and are therefore unaware of the vast career opportunities open to them.

So, how can we make the physiotherapy profession known to a pool of aspiring profession seekers? In the past, educational activities by physiotherapists to convey such information to the public including high school students have been carried out³⁾. A few pilot studies have also been done that have sought to find out how well the physiotherapy profession is known to the public⁴⁻⁸⁾. However, these earlier studies were mainly aimed at students who had already entered schools of

physiotherapy, physiotherapy consumers, healthcare professionals and the general public³⁻⁶, and not specifically at high school students who need to make a decision about their future career^{7,8}. Although more comprehensive studies concerning healthcare professionals' knowledge about the physiotherapy profession have been carried out overseas^{9, 10}, few investigations exist in the literature which have been specifically aimed at high school students, with the exception of the one by Tsuda et al.¹¹. However, the study of Tsuda et al. was carried out in the United States in the 1980's, and the environment, surrounding social conditions, healthcare and the physiotherapy profession may not correspond with present circumstances of Japanese society, hence the need for a similar study to be done in Japan. Through performing such a study, the trend currently taking place in high school students' choice of career and problems concerning their career choice could be examined. The purpose of this study was therefore to inquire about the accuracy, sources and factors influencing this information concerning the physiotherapy profession acquired by Ishikawa high school students in Japan.

METHODS

Instrumentation

A survey was implemented in this study. The questionnaire was composed of three parts. Part one of the questionnaire consisted of nine statements concerning knowledge of physiotherapy tasks, in addition to two distracters to portray possible misconceptions of physiotherapy. These statements and distracters were used as the dependent variables. The specific statements in English were those originally used by Tsuda and colleagues¹¹) and were translated into Japanese by the authors with consideration given to the current healthcare and social conditions in Japan. Physiotherapists in the University of Kanazawa Hospital Department of Physical Therapy then critically examined the translated version.

Part 2 of the questionnaire consisted of questions on the sources of the information obtained about the physiotherapy profession. Part 3 of the questionnaire included background information of the respondents' gender, seniority and field of study.

Scoring

A score of one was assigned to the answer *Yes* for any one of the nine statements and a score of zero for the answer *No*. Similarly, a score of one was designated to the answer *No*, and a score of zero to the answer *Yes* or *Don't know* for the two distracters. The higher the total score for the 11 statements, the more accurate was the knowledge of the physiotherapy profession perceived by the respondent.

Participants and procedures

Amongst the non-vocational prefectural senior high schools in the Second School District of Ishikawa Prefecture, the authors selected, as a sample of convenience, 623 students from two high schools (Schools A and B). The details of the respondents were as follows: School A, with a total of 314 respondents, consisted of students from four classes selected out of the second year (junior) and four classes of students from the third year (senior). Of these four classes two were a literary course and the other two a science course for both the junior and senior students. School B, numbering 309 respondents, had a similar combination as School A, thus, the total number of classes for Schools A and B amounted to sixteen.

Upon permission from the respective principals of the two high schools selected to participate in our survey, the authors distributed to the teacher in charge of each class a procedural manual for the questionnaires. The survey required approximately 10 minutes and the teachers were requested to conduct it in a classroom situation during December 2003, after which the authors collected the questionnaire. Assurance was given to all of the respondents that 1) the results would be used collectively and for research purposes only; and 2) participation in this survey would be strictly voluntary.

The rate of return was 99.4 per cent, from which four incomplete questionnaires were excluded from the analysis. Thus, the final sample consisted of 619 respondents.

Statistics

The demographic data of the respondents were first compiled, followed by the calculation of the mean, standard deviation and range of the dependent variables. Using the unpaired *t*-test the differences in scores were calculated according to

Table 1. Accuracy of response to each statement on physiotherapy tasks and distracters (%)

Task	Total (N=619)	School A (n=312)	School B (n=307)	Literary (n=297)	Science (n=322)	Boys (n=312)	Girls (n=307)	Senior (n=304)	Junior (n=315)	Health careers (n=95)	Non-health careers (n=524)
Physiotherapy											
Instructs a client in exercises	51	50	53	43	59 ^d	52	51	52	50	80	46 ^f
Gives massage	49	45	53 ^a	43	54 ^b	49	48 ^a	49	49	69	45 ^d
Plans a treatment programme	47	45	52	43	54 ^b	50	47	50	47	63	46 ^b
Works with joints to decrease pain/stiffness	39	40	38	30	47 ^d	39	39	38	39	67	34 ^f
Applies heat treatment	34	30	38 ^a	26	42 ^d	37	31	32	37	58	30 ^f
Gives emotional support to client/family	32	32	33	24	39 ^d	30	35	33	31	55	28 ^f
Teaches daily living skills	31	29	32	24	37 ^c	22	30	28	33	52	37 ^e
Assesses a client's need for treatment	27	25	30	24	30	32	23 ^b	26	29	35	26
Treats a client in an intensive therapy unit	6	6	7	4	8 ^a	8	5	8	5	13	5 ^b
Distracters											
Assists in surgery	58	55	62	51	65 ^c	57	60	57	60	82	54 ^f
Prescribes medications	50	48	52	43	57 ^c	50	51	50	50	78	45 ^f

^a $p < .05$; ^b $p < .01$; ^c $p < .001$; ^d $p < .0001$; ^e $p < .00001$; ^f $p < .000001$.

the schools, courses, gender, seniority, and orientation of the students towards their future career. Similarly, the differences in scores between Tsuda et al.'s results¹¹⁾ and ours were also compared.

As for the sources of information concerning the physiotherapy profession, the difference in scores amongst individually obtained information was calculated employing the *chi-square* test to verify the differences between the two schools, courses, gender, seniority, and healthcare/non-healthcare orientation of students towards their future career. Furthermore, *chi-square* analyses were carried out to determine whether the source of information influenced the accuracy of the respondents' knowledge of individual physiotherapy tasks. An alpha level of 0.05 was selected for statistical significance in this study, and computer software Microsoft Excel for Windows98 was used for the data analysis.

RESULTS

Knowledge of physiotherapy

The mean (and standard deviation) score of the respondents concerning the knowledge of physiotherapy was 4.3 (3.3), ranging from 0 to 11, which was significantly lower than that of 6.4 (2.3) in the study by Tsuda et al.¹¹⁾ ($p < .01$). The mean (and standard deviation, range) scores for the subgroups were as follows: 1) 4.0 (3.3, 0–11) for the 312 students in School A and 4.5 (3.4, 0–11) for the 307 students in School B; 2) 3.5 (3.2, 0–10) for the 297 literary students and 4.9 (3.3, 0–11) for the 322

science students; 3) 4.3 (3.4, 0–11) for the 312 boy students and 4.2 (3.3, 0–11) for the 307 girl students; 4) 4.2 (3.5, 0–11) for the 304 senior students and 4.3 (3.2, 0–10) for the 315 junior students; and 5) 6.5 (2.4, 0–11) for the 95 healthcare-aspiring students and 3.9 (3.3, 0–11) for the 524 non-healthcare-aspiring/pending students. As anticipated, the science students and healthcare-aspiring students scored significantly higher in their knowledge of physiotherapy than those of the literary and non-healthcare aspiring students, respectively.

Accuracy of knowledge

The level of accuracy in responses to the statements on physiotherapy tasks and distracters is shown in Table 1. *Instructs a client in exercises* (51%) was shown to be the most accurate, and *treats a client in an intensive therapy unit* (6%) was the least accurate. Healthcare-aspiring students and science students were found to be more accurate in their response to each statement than their respective counterparts, except for the response to *assesses a client's need for treatment*. The students in School B were found to be significantly more accurate than those in School A in their response to *gives massage* and *applies heat treatment*. The boy students showed significantly higher accuracy than the girl students in their response to *assesses a client's need for treatment*.

Sources of information

Amongst the three general categories for sources

Table 2. Rate of affirmative responses to each statement on sources of information concerning physiotherapy

Source	Total (N=619)	School A (n=312)	School B (n=307)	Literary (n=297)	Science (n=322)	Boys (n=312)	Girls (n=307)	Senior (n=304)	Junior (n=315)	Health careers (n=95)	Non-health careers (n=524)
Personal contacts (26%)											
Family member was a client	3	2	4	2	4	3	2	3	3	4	3
Friend was a client	2	2	2	1	3	3	1	2	2	2	2
I was a client	7	6	8	5	9 ^a	7	7	6	7	8	7
Family member told me	7	7	7	5	8	6	7	6	7	10	6
Friend told me	6	6	6	5	8	7	5	6	7	5	7
My family physician told me	3	2	3	1	4 ^a	2	3	2	3	5	2
Family member is a therapist	1	1	1	0	2	1	1	1	1	0	1
Friend is a therapist	1	0	1	0	1	1	0	1	1	2	1
Mass media (33%)											
Television	17	16	18	19	15	15	18	17	17	26	15 ^a
Films	1	1	1	1	1	1	1	1	1	2	1
Internet	2	1	3	2	3	2	2	2	2	4	2
Newspaper or magazine	7	6	9	7	8	7	8	7	7	11	7
Books	7	3	10 ^c	7	6	6	7	6	7	14	5 ^c
Advertisement	1	1	2	1	2	2	1	2	1	0	2
Radio	1	1	0	1	0	1	0	1	0	0	1
Career information resources (24%)											
Teacher, counselor, coach	6	6	6	6	5	5	6	3	8 ^a	11	5 ^a
Career literature/pamphlets	16	16	16	10	22 ^d	14	18	14	18	19	15
Career aptitude test	2	2	3	2	3	1	4 ^a	2	3	2	3
Visits to physiotherapy schools/hospital	1	1	1	1	1	1	1	1	1	2	1
Career day or health fair	1	2	1	1	2	1	1	2	1	0	2
Volunteer or work experience	1	0	1	0	1	1	0	1	0	0	1

^a $p < .05$; ^b $p < .01$; ^c $p < .001$; ^d $p < .0001$.

of information, a significantly larger number of students cited *mass media* rather than *personal contacts* or *career information resources*. *Television* was the source cited by most of the respondents. In the category of personal contacts, the most common source of information was *I was a client*, followed by *Family member was a client*. In the category of career information resources, the most common source of information was *career literature or pamphlets* (Table 2).

The students in School B obtained significantly more information from *books* compared to those in School A. The science students obtained significantly more information from *I was a client*, *My family physician told me*, and *career literature or pamphlets* compared to the literary students. The girl students obtained significantly more information as a result of *career aptitude test* compared to the boy students. The junior students obtained significantly more information from *teacher and/or leader of extracurricular activities* compared to the senior students. The healthcare-aspiring students obtained significantly more information from *television*, *books* and *teacher and/*

or leader of extracurricular activities compared to the non-healthcare-aspiring/pending students.

Effect of source on knowledge perceived

Although *television* and *career literature or pamphlets* were the two most cited sources of information concerning physiotherapy, the students who cited the latter source also accurately responded to everything except *treats a client in an intensive therapy unit* (Table 3). However, the students who cited the former source accurately responded to everything except *assesses a client's need for treatment*, *treats a client in an intensive therapy unit* and *applies heat treatment* (Table 4).

DISCUSSION

Ninety-two (86%) out of 109 respondents, who selected *others* amongst the sources of information, stated that *they became aware of the existence of the physiotherapy profession for the first time through this survey*. Moreover, 169 respondents failed to identify any source of information concerning physiotherapy, implying that these respondents had

Table 3. Accuracy of response to each statement with or without *career literature or pamphlets* as source of information (%)

	With	Without	<i>p</i>
Physiotherapy			
Instructs a client in exercises	68.4	48.1	.0001
Gives massage	58.5	46.8	.0001
Plans a treatment programme	59.5	34.8	.01
Works with joints to decrease pain/stiffness	34.7	26.1	.000001
Applies heat treatment	48.6	31.3	.0001
Gives emotional support to client/family	45.6	29.4	.001
Teaches daily living skills	63.4	46.0	.0001
Assesses a client's need for treatment	46.6	27.5	.05
Treats a client in an intensive therapy unit	7.0	6.4	n.s.
Distracters			
Assists in surgery	79.3	54.3	.000001
Prescribes medications	69.4	46.6	.000001

n.s.: non-significant.

Table 4. Accuracy of response to each statement with or without television as source of information (%)

	With	Without	<i>p</i>
Physiotherapy			
Instructs a client in exercises	71.3	47.5	.0001
Gives massage	70.3	44.5	.0001
Plans a treatment programme	50.5	36.5	.001
Works with joints to decrease pain/stiffness	33.7	26.3	.01
Applies heat treatment	38.7	33.3	n.s.
Gives emotional support to client/family	41.6	30.2	.05
Teaches daily living skills	67.4	45.2	.001
Assesses a client's need for treatment	45.6	27.7	n.s.
Treats a client in an intensive therapy unit	7.0	6.4	n.s.
Distracters			
Assists in surgery	77.3	54.7	.0001
Prescribes medications	63.4	47.7	.01

n.s.: non-significant.

no resource information. Therefore, slightly over a half (358 or 58%) of 619 respondents were believed to have had some knowledge of physiotherapy. The scores for the statements on having knowledge of physiotherapy fell far short of those of Tsuda et al.¹¹⁾. These findings suggest that the high school students in Ishikawa Prefecture are less informed about physiotherapy compared to students in the United States 21 years ago. This is probably due to the following factors: 1) There are only two schools of physiotherapy in Ishikawa Prefecture, one of which was established in 1979 and the other in the year 2000 with a full quota of only 50 students; 2) In general, the physiotherapy profession is still little

understood in Japan^{3, 7, 8)}; 3) People rarely come in touch with physiotherapy. However, of more serious concern is the fact that physiotherapy has largely become regarded as *rihabiri* or medical rehabilitation. In fact, the word *rehabilitation*, instead of being translated into appropriate Japanese language usage, has become propagated mostly in a medical context only, as well as being one of the therapeutic modalities since its inception in the 1960's. In other words, the word *rehabilitation* has lost its real meaning of a concept or an ideology in its proper usage in the English language³⁾. This fact can be strongly supported by the finding in this survey that the majority of the respondents did not

know, as will subsequently be mentioned, the provision of treatment by physiotherapists for clients in an intensive therapy setting as one of their routine tasks. Thus, the results from this survey may have been quite different if the word *rihabiri* had been used instead of the word *physiotherapy* in the statements.

In the study by Tsuda et al. 28 per cent of their respondents obtained information from a family member's experience in receiving physiotherapy¹¹⁾ and 61 per cent through their own personal experience of physiotherapy in contrast to 3 and 26 per cent, respectively, in this survey. Furthermore, 51 per cent of the American respondents obtained information from the mass media and 44% did so from career information resources in contrast to our respondents of 33 and 24 per cent, respectively. Thus, it is clear that the sources, quantity and quality of information concerning the physiotherapy profession for high school students in Ishikawa Prefecture are few and far between compared to those of their American counterparts in the 1980's.

In one survey carried out in Kanagawa Prefecture, 95.4% of high school students who responded that they were aware of physiotherapy⁷⁾, contrasting with 54% in another survey carried out in Saga Prefecture⁸⁾. However, the former survey was biased, for it was carried out on participants taking part in *physiotherapy week* organised by the Japanese Physical Therapy Association with their possible interest towards physiotherapy being comparatively high. On the contrary, the latter survey with the result of only 54% of respondents showing awareness of physiotherapy yielded a similar result to our own, suggesting that the perception of physiotherapy has hardly changed over a 5-year interlude.

The reason for the science students having a higher awareness of physiotherapy is very likely due to their greater exposure to information on science-oriented careers. In fact, career information resources for high school students lists the physiotherapy profession as one of the science-oriented professions^{12, 13)}. This fact is also backed by the results for the science students on their sources of information concerning physiotherapy in this study. A higher degree of knowledge of physiotherapy expressed by the healthcare-aspiring students is considered normal.

Eighty-five % of the respondents indicated

aspiring towards a career in this survey, which corresponded to the theory by Ginzberg et al. that a career choice is made within a period from early to late adolescence²⁾. In light of this fact the acquisition of appropriate career information during high school days is therefore to be considered important. Moreover, it is known that approximately 80% of student physiotherapists who have applied to a school of physiotherapy already had knowledge and interest in the role of a physiotherapist⁵⁾. Consequently, accurate knowledge about the physiotherapy profession is especially indispensable. However, the respondents of this survey had many misunderstandings about physiotherapy. For instance, 94% of the students were unaware of the role of the physiotherapists in an intensive therapy unit. Moreover, approximately half of the respondents had mistaken ideas about non-physiotherapy roles such as *assistant in an operating theatre* and *prescription of medications*. To many high school students, intensive therapy was possibly confused with resuscitation, thinking that it is the role of doctors and nurses only. The factor for the low level of accuracy in responses to the statements on tasks concerning intensive therapy may also be due to unfamiliarity on the part of the respondents of cardiopulmonary physiotherapy and early exercise therapy that are frequently carried out in an intensive therapy setting.

The differences in the accuracy of knowledge were most apparent between the literary and science students and between the healthcare-aspiring and non-healthcare-aspiring/pending students for most of the physiotherapy tasks with the exclusion of *client's assessment*. Although science and healthcare-aspiring students seem to have many opportunities to gain information about the physiotherapy profession, there is the possibility that their sources of information lack the description that physiotherapists assess clients. *Making of a diagnosis* is an essential task of a physician, which is a well-known fact, and, because of this, its specific description is generally omitted from career information. Similarly, it may be possible that *client's assessment* by the physiotherapist, which is equivalent to the physician's making of a diagnosis, is also omitted from the job description. However, the respondents might have misunderstood that the task of a physiotherapist is only treatment of clients. Therefore, physiotherapists themselves must also

put emphasis on *client's assessment*, and further description should be added to the various sources of career information.

The junior students tended to obtain information concerning physiotherapy from *teacher and/or leader of extracurricular activities*. This finding may be due to the fact that, while most of the senior students had already retired from the extracurricular activities, the junior students were still active in them. This reasoning can be backed by the fact that nearly 80% of the junior students of the two high schools were pursuing extracurricular activities related to sports¹⁵). The reason why the healthcare-aspiring students rated the mass media as a source of information as high is probably due to the fact that, by chance, they come to know various professions through it and then begin to consider one of them as their possible future career. This also meets the theory of Ginzberg et al.²).

Based on the analysis of *television* and *career literature or pamphlets* as resources, it is suggested that these two highest rated sources of information are the most likely influences on their knowledge about physiotherapy. However, the respondents whose source of information was *career literature or pamphlets* had the highest accuracy rate in responses to most of the statements. *Television* alone as a source of information may be considered inadequate, since no difference existed in the response to *heat treatment*, *assessment* and *intensive therapy* by the respondents who cited television compared to those who did not. For example, when a physiotherapist is cast in a television drama, it is more effective to draw a viewer's attention with a scene showing *gait training* and/or *exercise therapy* rather than that of *heat treatment* and *assessment*, because the former portrays a client's or physiotherapist's efforts much more visually and dramatically. Most respondents were not aware of physiotherapists working in an intensive therapy unit, and this indicates that the level of knowledge of the general public as well as the maker of the television programmes concerning the physiotherapy profession is low. Thus, there is little possibility of advancement in the exposure to the physiotherapy profession through television programmes. It is therefore necessary for physiotherapists themselves to actively work towards educating the mass media. After all, half of the general public is dependent on mass media for acquisition of information on their health and

illness¹⁶).

The reason why the students of School B cited textbooks and/or a novel is that these sources may have been used as teaching material in which physiotherapy is mentioned. Regarding the science students' citing *I was a client*, *My family physician told me*, and *career literature or pamphlets*, this may be due to their natural inclination to seek out and put emphasis on this personal information because it is more relevant to them as science-oriented students.

From the results of *career aptitude test*, it is difficult to find a possible, rational explanation for the difference between genders in the opportunity to obtain information concerning the physiotherapy profession. Also, the reason for the following two findings are unclear: the difference between the respondents of the two schools in their response to *massage* and *heat treatment* and that between genders in the response to *assessment*.

The students from the two schools who took part in this survey had a scholastic ability of more than 60 deviation values and a high probability rate of going on to higher education. Sources of information available through career guidance counselling for students will differ depending on whether a student is aiming for higher education or vocational training¹), so that knowledge and sources of information concerning the physiotherapy profession will also vary. Therefore, studies may also be required in the future to target students of high schools with varying academic ability.

CONCLUSION

This study was designed to determine high school students' knowledge and their sources of information on the physiotherapy profession, as well as factors influencing them. Knowledge of physiotherapy was found to be significantly greater amongst the science and healthcare-aspiring students than the literary and non-healthcare-aspiring/pending students, respectively. Mass media was considered the major influential source of information and many respondents cited television and literature or pamphlets on careers as sources of information. It is to be hoped that knowledge of physiotherapy will increase among high school students by repletion and improvement in the accuracy of information conveyed by professionals themselves and mass media.

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