

ORIGINAL RESEARCH

Attitudes towards people with physical or intellectual disabilities: nursing students and non-nursing peers

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Abstract

Title. Attitudes towards people with physical or intellectual disabilities: nursing students and non-nursing peers.

Aim. This paper is a report of a study of the attitudes of Dutch nursing students towards people with physical or intellectual disabilities.

Background. Attitudes of healthcare professionals are a major factor in the rehabilitation and self-acceptance of persons with disabilities. Consequently, it is important that nurses develop or maintain positive attitudes towards people with disabilities during their education. However, more knowledge is needed about current attitudes of nursing students and factors influencing these attitudes.

Methods. A sample of Dutch nursing students ($n = 81$) and an age-matched group of non-nursing peers ($n = 48$) completed standardized scales measuring attitudes about physically or intellectually disabled people. Data were collected in 2006.

Findings. Nursing students were more positive towards physically disabled people than their peers, and more strongly endorsed empowerment and similarity of intellectually disabled people. These attitudinal differences generally remained statistically significant after multivariate adjustment for demographic variables and experience and contact with individuals with disabilities. An important independent determinant of a positive attitude towards physically disabled people in the total sample was having a relative or friend with a physical disability. This association, however, was not apparent in attitudes towards intellectually disabled persons.

Conclusion. Educational interventions aimed at improving attitudes towards people with disabilities should include focus on forms of contact beyond the context of formal care relationships.

Keywords: attitudes, intellectual disabilities, non-nursing peers, nursing students, physical disabilities

Introduction

Nurses are frequently involved in the treatment and care of people with physical or intellectual disabilities. As with other healthcare professions, the curricula of nursing schools are often based on a medical model of care, with a strong focus on understanding, diagnosing and treating disease processes. However, people with disabilities are not necessarily unwell and may not have a disease (Byron & Dieppe 2000). Moreover, besides factors intrinsic to their disability, the attitudes of healthcare professionals are very important in rehabilitation of disabled persons (Chubon 1982, Tervo *et al.* 2004) and can influence a disabled patient's response to treatment and development or maintenance of self-acceptance (Oermann & Lindgren 1995). In fact, disabled people often identify inappropriate staff attitudes and behaviours as the biggest barrier to using health services (Carter & Markham 2001). Therefore, it is important that nurses develop or maintain positive attitudes towards people with disabilities early in their education.

Background

Attitudes are commonly considered as a combination of three elements: beliefs, feelings, and the intention to act (Kothandapani 1971, Breckler 1984). In line with this conceptualization, Tervo *et al.* (2004) define a positive attitude towards disability as:

a belief that those with disability can be productive community members, decide what is their own self-interest, and lead a normal life. At the affective level, it suggests sensitivity toward positive attributes and liking the person. At the behavioural level, it implies fashioning conditions to help an individual actualize their creative capacity toward self-sufficiency and contribute to the community. (p. 908–909)

Previous research has suggested that the attitudes of healthcare professionals mirror, or may even be worse than, the often negative and non-accepting attitudes towards people with disabilities in the general population (Gething 1992a, Paris 1993). Given these findings and the important role nurses play in the care and empowerment of people with physical or intellectual disabilities, several researchers have argued for the need to promote more positive attitudes of nursing students to persons with disabilities by moving away from the restrictive medical model of care and perspective on disability towards a more social model (Scullion 1999, Chenoweth *et al.* 2004, Seccombe 2007a). As attitudes are generally considered learned dispositions, changes in the curriculum of nursing education or specific interventions

could be effective in changing students' attitudes. Indeed, recent studies in nursing and other healthcare professions suggest that students' attitudes towards disabled persons may be improved by various educational programmes, such as direct contact and working with disabled people, experiential learning camps, simulation exercises or by combinations of strategies (Oermann & Lindgren 1995, Van Boxtel *et al.* 1995, Goddard & Jordan 1998, White *et al.* 2000, Chan & Cheng 2001, Thompson *et al.* 2003).

However, there are still important gaps in current knowledge about attitudes of nursing students and the factors influencing these attitudes (White *et al.* 2000). First, although many researchers have examined attitudes towards people with disabilities among healthcare professionals, most of these studies were performed between the 1960s and 1980s or focused on already working professionals. Some more recent researchers have examined or compared attitudes of students in various health professions, such as medicine (Paris 1993, Tervo *et al.* 2002), occupational and physical therapy (Lyons 1991, Eberhardt & Mayberry 1995, Stachura & Garven 2007), rehabilitation (Wong *et al.* 2004, Rosenthal *et al.* 2006) and social work (Au & Man 2006). However, these studies neither did include nursing students, nor did they compare the results with a relevant control group. Only very few relatively recent studies are available that have specifically examined the attitudes of nursing students towards disability or that have compared nursing students' attitudes with the general population or other groups of interest. Brillhart *et al.* (1990) found nursing students to have statistically significantly more negative attitudes than persons with disabilities themselves, where graduating nursing students were more negative than beginning students. Gething (1992a) explored judgments by undergraduate and postgraduate healthcare professionals, including nursing students, of personal characteristics of people with a visible physical disability. She found that respondents devalued disabled persons by attributing them personal characteristics having no necessary relationship to the disability. In another study (Gething 1992b), however, she did find that nurses' and nursing students' attitudes were more positive than those of the general population. More recently, Tervo *et al.* (2004) showed that healthcare student attitudes towards people with disability were below normative values, and that nursing students had the least positive attitudes compared with medical students and other healthcare students.

Additionally, several studies have focused on factors that may influence attitudes towards people with disabilities in general. The variables most frequently reported are gender, age, and contact and experience with persons with disability (Antonak 1981, Chubon 1982, Biordi & Oermann 1993,

Paris 1993, White & Olson 1998, Choi & Lam 2001, Tervo *et al.* 2002). In general, female and older respondents display more favourable attitudes towards people with disabilities than male and younger respondents. Additionally, increased experience and contact with individuals with disabilities are often correlated with more positive attitudes. Interestingly, some recent studies suggest that the form of contact is a more powerful predictor for attitudes than contact *per se* (Lyons 1991, McConkey & Truesdale 2000, Horner-Johnson *et al.* 2002, Stachura & Garven 2007), indicating that those with personal contact with people with disabilities outside their working lives (e.g. a relative or close friend) hold more positive attitudes.

In summary, only few recent studies have specifically examined the attitudes of nursing students towards people with physical or intellectual disabilities in comparison with a control group of non-nursing students. Moreover, these studies have had somewhat conflicting results. Therefore more research is needed to identify the most powerful independent predictors of these attitudes.

The study

Aim

The aim of the study was to investigate the attitudes of Dutch nursing students towards people with physical or intellectual disabilities. The detailed aims were:

- To examine the attitudes of Dutch nursing students towards people with physical or intellectual disabilities.
- To compare their attitudes with those of an age-matched group of non-nursing peers.
- To identify independent determinants of attitudes towards persons with disabilities.

Design

A cross-sectional study was conducted in 2006, using a survey to collect the data.

Participants

Participants were a convenience sample of first- and fourth-year nursing students and a group of non-nursing controls. *A priori* power analysis indicated that at least 48 participants in each group were needed for a two-sided *t*-test to have 80% power ($\alpha = 0.05$) of detecting a 10 point difference (estimated within group *SD* = 17.5) on the attitude measures towards people with physical disabilities or a 0.4 point difference (*SD* = 0.7) on the measure of attitudes towards intellectual

disabilities. Given an expected peer response rate of 60%, an estimated 80 nursing students needed to be recruited.

The nursing students were recruited from the Bachelor's degree nursing programme at a university in the Netherlands. First-year students were given a survey package during a class meeting, while fourth-year students received the same package in their physical mailbox. The package included the survey, a cover letter explaining the goal of the study and the voluntary and anonymous nature of participation, and a stamped return envelope. Additionally, it contained a second copy of the survey along with a similar cover letter and stamped return envelope. Nursing students who completed the survey were asked to present these to a friend who was not a nurse or nursing student. The intention behind this sampling strategy was to generate a peer control group with approximately the same age and socio-economic background as the nursing students.

Questionnaires

The questionnaire consisted of two sections. The first section contained demographic items and general questions assessing the respondent's personal experience with people with disabilities. In the introduction of this section, people with disabilities were defined as people who were substantially limited (or considered as such by others) in their functioning and/or participation in society as a result of a physical or mental condition. All questions pertaining to disabilities were asked separately for physical disabilities and intellectual disabilities and included having a disability themselves (yes/no), working experience with clients or patients with disabilities (yes/no), and frequency of contact with persons with disabilities (less than once a month, about once a month, 2–3 times a month, about once a week and several times a week). Familiarity with persons with disabilities was also assessed by asking participants to indicate whether they knew people with a disability and to indicate the nature of their relationship to this person(s). In the analyses, responses to these items were dichotomized into whether or not the participant had a relative or friend with a disability.

The second section of the questionnaire contained three standardized scales measuring attitudes about either physically or intellectually disabled people. Each scale was accompanied by a short introduction explaining its context and instructions on completion. Two widely-used and -accepted scales were used to measure respondents' attitudes towards persons with one or more physical disabilities. The Attitude Toward Disabled Persons Scale-Form A (ATDP-A) (Yuker *et al.* 1960) measures the extent to which people perceive persons with disabilities in general as being similar

to or different from persons without disabilities. The scale is composed of 30 statements to which respondents are asked to indicate their agreement on a 6-point Likert-type response scale ranging from 'disagree very much' (-3) to 'agree very much' (+3). The ATDP-A yields a single summated score from 0 to 180, where a relatively low score (i.e. <90) indicates that the respondent perceives people with disabilities as different from non-disabled people. A high score indicates that the respondent perceives people with disabilities as being not very different from non-disabled people. The original scale has relatively high reliability, with reported Cronbach α values ranging from 0.83 to 0.85, and has been shown to correlate strongly with other measures of attitudes towards persons with disabilities (Yuker & Block 1986, Antonak & Livneh 1988).

Although the ATDP Scale is the best known and most widely used scale to measure attitudes towards people with disabilities, concerns have been raised about its hypothesized unidimensional structure, outdated items, and its susceptibility to socially desirable responses (Antonak 1980, Livneh 1985, Cannon & Szuhay 1986, Yuker 1986, Antonak & Livneh 1988, Speakman *et al.* 1994). Therefore, we also used the Scale of Attitudes Toward Disabled Persons (SADP; Antonak 1982). The SADP was constructed as a more contemporary, easy-to-use, and psychometrically sound scale to assess general attitudes towards people with disabilities as a group (Antonak & Livneh 1988). The scale consists of 24 statements and uses the same response format as the ATDP-A. Factor analysis showed that the SADP consists of three factors: optimism-human rights, behavioural misconceptions and pessimism/hopelessness. However, the scale is scored to yield a single summated score from 0 to 144, with a higher score indicating a more favourable attitude towards persons with disabilities. Cronbach α values of the original total scale ranged from 0.88 to 0.91, and the instrument has shown good convergent and construct validity (Antonak 1982, 1985).

Respondents' attitudes towards persons with intellectual disabilities were assessed with the Community Living Attitudes Scale Mental Retardation (CLAS-MR) Short Form (Henry *et al.* 1996b, 1998). This measures attitudes towards persons with intellectual disabilities on four contemporary dimensions: Empowerment, Exclusion, Sheltering and Similarity. As with the ATDP-A and SADP, respondents are asked to rate their agreement with statements on a 6-point Likert-type scale. The short form version used in this study contains 17 statements most representative of the subscales of the full form CLAS-MR (Henry *et al.* 1998). Scores on the subscales of the CLAS-MR

Short Form are obtained by calculating the mean of their items, yielding a possible score of 1-6. Higher scores on the Empowerment and Similarity subscales indicate more positive attitudes, whereas higher scores on Exclusion and Sheltering indicate less positive attitudes. The full version of the CLAS-MR has been shown to be valid, reliable and relatively free from social desirability bias in various samples, including students and general community members (Henry *et al.* 1996b). Cronbach α values of the original short form version were 0.67 for the Empowerment subscale, and 0.85, 0.72 and 0.79 for the Exclusion, Sheltering, and Similarity subscales, respectively (Henry *et al.* 1998).

Since none of the attitude scales were available in Dutch, the ATDP-A, SADP and CLAS-MR Short Form were translated by the authors (PMTK and JJR). Disagreements in translation were discussed and resolved by consensus. Care was taken to preserve as much of the original wording as possible, although two minor wording modifications were made to the ATDP-A and SADP. First, the items of both scales were rephrased to refer specifically to physical disability rather than disability in general. Second, as suggested by Patterson and Witten (1987), Lynch *et al.* (1994) and Gouvier *et al.* (2000), we used non-disabling, people-first descriptors (e.g. 'persons with physical disabilities') in the items of the ATDP-A and SADP instead of the original wording (e.g. 'physically disabled persons'). The translated attitude scales were pilot-tested for readability and comprehension with 10 nursing students, who encountered few to no problems in completing the scales.

Ethical considerations

The study was approved by the appropriate ethics committee.

Data analysis

All analyses were performed using SPSS 16.0 for Windows (SPSS Inc, Chicago, IL, USA). Normal distribution of the variables was tested with the Kolmogorov-Smirnov test (normal distribution assumed when $P > 0.05$). As an initial step in the analysis, the convergent validity and reliability of the attitude scales was assessed by intercorrelating the scales and calculating the Cronbach α coefficients for the respective (sub-) scales in the total sample. It was hypothesized that the related but distinct constructs measured by the scales should be moderately correlated. Cronbach α values > 0.70 were considered to indicate good internal consistency of the scale, whereas values > 0.60 were considered adequate for exploratory purposes. Demographic and attitudinal differences

between nursing students and controls were tested using independent *t* tests for normally distributed variables, Mann–Whitney *U* tests for non-normally distributed variables, and chi-square tests (or Fisher's exact tests when appropriate) for categorical variables.

To control for potential confounding and to identify additional independent determinants of attitudes towards persons with disabilities, we performed separate hierarchical multiple linear regression analyses in the total sample with the total scores on the ATDP-A and SADP, and the subscale scores on the CLAS-MR Short Form as the dependent variables. Variables that have previously been found to be associated with attitudes towards people with disabilities were entered simultaneously as covariates into the first block of the models, and included age, gender, working experience with persons with disabilities, frequency of contact with persons with disabilities, and having a relative or friend with a disability. Group (nursing student vs. non-nursing control) was entered in the second block. Normal distribution of the residuals was tested using Kolmogorov–Smirnov tests (normal distribution assumed when $P > 0.05$). Multicollinearity was analysed by calculating variance inflation factors (VIF). VIF values > 10 and an average VIF that is substantially > 1 are indications of multicollinearity. The assumption of homoscedasticity was checked by inspecting a plot of standardized residuals against standardized predicted values. The data were checked for outliers. Outliers were defined as having a standardized residual > 3 .

Missing data

The percentage of missing values on the individual scale items ranged from 0.6 to 3.2 on the ATDP-A, 0–3.8 on the SADP and 1.9–2.5 on the CLAS. Respondents with more than 10% missing values on one of these scales (i.e. > 3 items on the ATDP-A or > 2 items on the SADP or CLAS) were excluded from the analyses. As a result, eight respondents (three nursing students and five non-nursing peers) were deleted from the initial data set. The remaining missing values on the ATDP-A, SADP and CLAS-MR Short Form (mean percentage of remaining missing values per item: 0.3%) were replaced with the mode for the applicable item.

Results

Participant demographics

In total, 78 nursing students and 43 non-nursing peers were included in the analyses. The nursing student sample consisted of 55 first-year and 23 fourth-year students.

Table 1 Participant demographics

	Nursing students (<i>n</i> = 78)	Non-nursing peers (<i>n</i> = 43)	<i>P</i> value
Age in years (median, interquartile range)	20.0 (18–22)	21.0 (20–22)	0.112
Gender			
Female	70 (89.7)	23 (53.5)	< 0.001
Male	8 (10.3)	19 (44.2)	
Ever worked with clients or patients with physical disabilities?			
Yes	35 (44.9)	7 (16.3)	0.003
No	43 (55.1)	34 (79.1)	
Ever worked with clients or patients with intellectual disabilities?			
Yes	26 (33.3)	11 (25.6)	0.466
No	52 (66.7)	30 (69.8)	
Do you have a disability?			
Yes, physical	4 (5.1)	1 (2.3)	0.415
Yes, intellectual	–	–	
No	74 (94.9)	42 (97.7)	
Relative or friend with a physical disability?*			
Yes	41 (52.6)	17 (39.5)	0.17
No	37 (47.4)	26 (60.5)	
Relative or friend with an intellectual disability?*			
Yes	15 (19.2)	12 (27.9)	0.163
No	63 (80.8)	27 (62.8)	
Contact with persons with a physical disability			
Less than once a month	18 (23.1)	22 (51.2)	0.019
About once a month	9 (11.5)	5 (11.6)	
2–3 times a month	11 (14.1)	3 (7.0)	
About once a week	18 (23.1)	4 (9.3)	
Several times a week	22 (28.2)	8 (18.6)	
Several times a week	22 (28.2)	8 (18.6)	
Contact with persons with an intellectual disability			
Less than once a month	38 (48.7)	27 (62.8)	0.39
About once a month	5 (6.4)	4 (9.3)	
2–3 times a month	10 (12.8)	4 (9.3)	
About once a week	13 (16.7)	3 (7.0)	
Several times a week	11 (14.1)	4 (9.3)	
Several times a week	11 (14.1)	4 (9.3)	

Values are *n* (%) unless indicated otherwise. Differences tested with chi-square tests (or Fisher's exact tests when appropriate), except for age (Mann–Whitney *U*-test).

*Includes the categories spouse/partner, family member/relative or friend.

Demographics of the nursing students and non-nursing peers are reported in Table 1. The groups were well-matched for age, but there were statistically significantly more females in the nursing student group. In the peer control group, 35 participants (81.4%) reported that they were still studying, whereas six (14.0%) were in paid employment. As expected, statistically significantly more nursing students had worked with clients or patients with physical disabilities than non-nursing peers, and nursing students had more frequent contact with persons with physical disabilities. There were no statistically significant differences in working experience

or contact with persons with intellectual disabilities between the two groups. In both groups, only a few participants reported having a physical disability themselves, and none reported having an intellectual disability. Finally, there were no statistically significant differences between nursing students and their peers in the proportion of participants who had a relative or friend with either a physical or intellectual disability.

Validity and reliability of the attitude scales

The reliability and convergent validity of the attitude scales in the total study sample are reported in Table 2. Internal consistency of the scales was generally good, with Cronbach α coefficients above 0.70 for the ATDP-A, SADP, and the Exclusion and Similarity subscales of the CLAS-MR Short Form. Reliability of the Empowerment subscale was rather low, but still acceptable for exploratory purposes. The Sheltering subscale had poor internal consistency and could not be sufficiently improved by deletion of any of the items.

With the exception of the Sheltering subscale of the CLAS-MR Short Form, the different scales and subscales were statistically significantly but only moderately correlated in the expected direction (r values ranging between -0.59 and 0.56), confirming that the scales measure somewhat different but related attitude concepts. Scores on the attitude scales were normally distributed, except for the CLAS-MR Exclusion subscale ($Z = 1.77, P < 0.005$).

Univariate analyses of attitudes towards people with disabilities

Table 3 shows the mean scores of the nursing students and non-nursing peers on the different attitude scales. Nursing students had higher scores on both the ATDP-A [$t(119) = 3.32, P = 0.001$] and the SADP [$t(119) = 3.56, P = 0.001$] than the non-nursing peers, indicating that the nursing students had a more positive attitude towards people with physical disabilities. Nursing students were also more favourable towards empowerment [$t(119) = 2.79, P = 0.006$]

Table 2 Internal consistencies and intercorrelations of the attitude scales in the total study sample ($n = 121$)

	No. items	α	1	2	3	4	5
1. ATDP-A	30	0.72					
2. SADP	24	0.86	0.49**				
3. CLAS-MR Empowerment	5	0.64	0.26**	0.27**			
4. CLAS-MR Exclusion	4	0.77	-0.37**	-0.43**	-0.30**		
5. CLAS-MR Sheltering	4	0.53	0.03	0.11	-0.25**	-0.09	
6. CLAS-MR Similarity	4	0.75	0.47**	0.56**	0.35**	-0.59**	-0.04

Correlations are Pearson correlation coefficients, except for all correlations with CLAS-MR Exclusion (Spearman rho coefficients). ATDP-A, Attitude Toward Disabled Persons Scale-Form A; SADP, Scale of Attitudes Toward Disabled Persons; CLAS-MR, Community Living Attitudes Scale Mental Retardation.

** $P < 0.01$.

Table 3 Attitude scores of the study groups

	Nursing students ($n = 78$)	Non-nursing peers ($n = 43$)	P value
ATDP-A (range 0–180)	115.03 (17.47)	103.56 (19.43)	0.001
SADP, total (range 0–144)	111.87 (15.49)	100.47 (19.12)	0.001
CLAS-MR Short Form (range 0–6)			
1. Empowerment	4.12 (0.75)	3.71 (0.79)	0.006
2. Exclusion	1.84 (0.73)	2.10 (1.01)	0.365
3. Sheltering	3.76 (0.69)	3.78 (0.80)	0.889
4. Similarity	4.89 (0.75)	4.52 (0.95)	0.020

Values are mean (SD). Differences tested using independent samples t -tests, except for CLAS-MR Exclusion (Mann–Whitney U -test).

ATDP-A, Attitude Toward Disabled Persons Scale-Form A; SADP, Scale of Attitudes Toward Disabled Persons; CLAS-MR, Community Living Attitudes Scale Mental Retardation.

and similarity [$t(119) = 2.36, P = 0.020$] of individuals with intellectual disabilities than their peers. There were no statistically significant differences between nursing students and peers on the 'negative' dimensions of the CLAS-MR Short Form [Exclusion: $t(66.52) = -1.51, P = 0.137$; Sheltering $t(119) = -0.14, P = 0.889$].

Multivariate analyses of attitudes towards people with disabilities

Since the attitude differences between nursing students and non-nursing peers could be confounded by demographic differences between the samples or differences in experience and contact with people with disabilities, we performed multivariate analyses for the total sample. After controlling for possible confounders using multiple linear regression analyses, being a nursing student remained a statistically significant independent predictor of a more positive attitude towards people with physical disabilities (Table 4). Being a

nursing student was no longer predictive of a more favourable attitude towards empowerment of intellectually disabled persons, but remained an important predictor of a more positive attitude with respect to similarity of people with and without intellectual disabilities (Table 5). Additionally, being a nursing student was now statistically significantly associated with lower scores on the Exclusion subscale, indicating a more positive attitude towards people with intellectual disabilities.

Having a relative or friend with a physical disability proved to be a strong and independent predictor of a positive attitude to people with physical disabilities, as measured with both the ATDP-A and the SADP. However, having a relative or friend with an intellectual disability was not predictive of attitudes towards people with intellectual disabilities. Older age was a marginally statistically significant predictor of a more positive attitude to physically disabled persons on the ATDP-A, but not on the SADP. Also, female gender was statistically significantly associated with higher scores on

Table 4 Hierarchical multiple linear regression analyses of factors associated with attitudes towards persons with physical disabilities ($n = 121$)

	<i>B</i>	SE <i>B</i>	β	<i>t</i>	<i>R</i> ²	<i>F</i>	ΔR^2	ΔF
ATDP-A								
Block 1								
Gender [†]	-4.05	4.22	-0.09	-0.96				
Age	0.78	0.38	0.18	2.07*				
Working experience [‡]	2.80	3.86	0.07	0.73				
Relative/friend [§]	8.61	3.42	0.23	2.52*				
Contact [¶]	-1.33	1.13	-0.12	-1.18	0.12	3.09*		
Block 2								
Group ^{††}	-4.16	1.28	-0.32	-3.24***	0.20	4.54***	0.08	10.50**
SADP								
Block 1								
Gender [†]	-1.67	4.07	-0.04	-0.41				
Age	0.46	0.36	0.11	1.26				
Working experience [‡]	1.48	3.71	0.04	0.40				
Relative/friend [§]	7.21	3.29	0.20	2.19*				
Contact [¶]	-1.24	1.09	-0.11	-1.14	0.08	1.98		
Block 2								
Group ^{††}	-4.16	1.24	-0.34	-3.37***	0.17	3.70**	0.08	11.35**

B and β coefficients are reported for the final model only. For the regression analyses of ATDP-A and SADP the assumptions of normal distribution of residuals, no multicollinearity, and homoscedasticity were not violated. No outliers were detected in the data.

ATDP-A, Attitude Toward Disabled Persons Scale-Form A; SADP = Scale of Attitudes Toward Disabled Persons.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

[†]0, male and 1, female.

[‡]Ever worked with clients or patients with physical disability (0, no and 1, yes).

[§]Having a relative or friend with physical disability (0, no and 1, yes).

[¶]Contact with persons with physical disability (1, less than once a month; 2, about once a month; 3, 2-3 times a month; 4, about once a week; 5, several times a week).

^{††}0, nursing student; 1, non-nursing control.

Table 5 Hierarchical multiple linear regression analyses of factors associated with attitudes towards persons with intellectual disabilities ($n = 121$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	R^2	<i>F</i>	ΔR^2	ΔF
Empowerment								
Block 1								
Gender [†]	0.09	0.21	0.05	0.42				
Age	0.00	0.02	0.02	0.24				
Working experience [‡]	-0.13	0.17	-0.08	-0.78				
Relative/friend [§]	0.00	0.19	0.00	0.02				
Contact [¶]	0.02	0.05	0.05	0.44	0.03	0.57		
Block 2								
Group ^{††}	-0.11	0.06	-0.20	-1.90	0.06	1.08	0.03	3.60
Exclusion								
Block 1								
Gender [†]	0.52	0.22	0.26	2.33*				
Age	-0.01	0.02	-0.03	-0.33				
Working experience [‡]	0.05	0.18	0.03	0.30				
Relative/friend [§]	-0.01	0.21	-0.01	-0.05				
Contact [¶]	-0.02	0.06	-0.05	-0.45	0.03	0.76		
Block 2								
Group ^{††}	0.13	0.06	0.23	2.21*	0.08	1.46	0.04	4.87*
Sheltering								
Block 1								
Gender [†]	-0.59	0.19	-0.34	-3.04**				
Age	0.01	0.02	0.04	0.40				
Working experience [‡]	-0.20	0.16	-0.13	-1.27				
Relative/friend [§]	-0.32	0.18	-0.19	-1.79				
Contact [¶]	0.01	0.05	0.02	0.21	0.08	1.76		
Block 2								
Group ^{††}	-0.07	0.05	-0.14	-1.35	0.09	1.78	0.02	1.82
Similarity								
Block 1								
Gender [†]	-0.31	0.23	-0.15	-1.38				
Age	0.01	0.02	0.07	0.76				
Working experience [‡]	0.15	0.18	0.08	0.81				
Relative/friend [§]	-0.01	0.21	-0.01	-0.07				
Contact [¶]	-0.03	0.06	-0.06	-0.56	0.02	0.54		
Block 2								
Group ^{††}	-0.17	0.06	-0.29	-2.79**	0.09	1.78	0.07	7.80**

B and β coefficients are reported for the final model only. For the regression analyses of CLAS-MR scales, the assumptions of normal distribution of residuals, no multicollinearity, and homoscedasticity were not violated. No outliers were detected in the data for Empowerment, Exclusion and Sheltering. For Similarity one outlier was detected (standardized residual = -3.05). Re-analysis of the data after removing the outlier did not substantially change the results.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

[†]0, male and 1, female.

[‡]Ever worked with clients or patients with intellectual disability (0, no and 1, yes).

[§]Having a relative or friend with intellectual disability (0, no and 1, yes).

[¶]Contact with persons with intellectual disability (1, less than once a month; 2, about once a month; 3, 2-3 times a month; 4, about once a week; 5, several times a week).

^{††}0, nursing student and 1, non-nursing control.

Exclusion and lower scores on Sheltering. All in all, the total predictive power of demographic factors and experience and contact with persons with disabilities was rather low, with an

explained variance (R^2) of around 20% for attitudes towards physically disabled people and between 6% and 9% for attitudes towards intellectually disabled people.

Discussion

Study limitations

An important limitation of this study was that the data were collected from a relatively small convenience sample from only one educational institution. In The Netherlands, 17 higher educational institutions offer a bachelor's degree programme in nursing, and in the academic year 2005–2006 the total number of registered nursing students at these institutions exceeded 11,000. Although Dutch bachelor programmes in nursing are generally quite similar in curricular content and the demographic characteristics of the study sample were reasonably consistent with the demographic composition of Dutch nursing students in general, the findings may not be generalizable to all nursing students in The Netherlands.

Also, the translation of the attitude scales did not fully follow current guidelines for translating existing questionnaires (Hilton & Skrutkowski 2002). Specifically, the translation procedure did not include back-translation of the attitude scales. Consequently, the translated scales used in this study may not be culturally equivalent to the original English versions, and direct comparisons of attitude scores across countries should be made with caution. The cultural equivalence of the attitude scales can be examined by testing whether they display differential item functioning, i.e. if the scales contain items that function differently across subgroups of patients after controlling for the underlying latent variable. Future research could examine more thoroughly whether the attitude scales used are equivalent across cultures and samples, using pooled data from different countries or cohorts.

Study outcomes

Our results showed that Dutch nursing students are generally more positive towards people with disabilities than their non-nursing peers. After controlling for demographic characteristics and previous experience and contact with people with disabilities, nursing students were more favourable towards people with physical disabilities and more strongly supported similarity and rejected exclusion of people with intellectual disabilities. An important additional predictor of a more positive attitude about physically disabled people was having a relative or friend with a physical disability. Surprisingly, this association was not apparent in attitudes towards intellectually disabled persons.

Cronbach α coefficients and intercorrelations between the different attitude measures generally suggested sufficient

validity and reliability of the scales for them to be confidently used in research with Dutch respondents. However, as opposed to the original United States (US) version, the Sheltering subscale showed poor internal consistency in our study. This low internal consistency could be caused by difficulties in translating the terms used in this scale to the Dutch situation, an issue the developers of this scale previously encountered in research on translating the CLAS-MR (Henry *et al.* 1998). Additionally, missing values were low for all scales, giving some preliminary support for the feasibility and understandability of the scales to the respondents. The finding that the ATDP-A and the SADP presents very similar results in all analyses suggests that the shorter and more contemporary SADP suffices to measure attitudes towards physical disabilities.

The overall finding that nursing students were more positive about people with disabilities than their non-nursing student peers contradicts the previous general notion that healthcare professionals' attitudes mirror, or may even be worse than, those of the general population. However, it is in accordance with some more recent research comparing the attitudes of (student) healthcare professionals and the general public. For instance, Gething (1992b) found that nurses' and nursing students' attitudes were more positive than those of the general population. Using the CLAS-MR, Henry *et al.* (1996a) found that community-living staff members held more favourable attitudes towards inclusion of people with mental retardation than other community members. Similarly, Schwartz and Armony-Sivan (2001) concluded that social work students had more positive inclusion attitudes than other students.

The finding that nursing students' attitudes are more positive than those of non-nursing peers, however, does not necessarily imply that their attitudes are overall positive and supportive or in line with contemporary philosophies and policies in health care and society. To examine this thoroughly, we would need normative values for each of the attitude scales used, i.e. some cut-off score that would indicate a 'sufficiently' positive and supportive attitude. Although the scales used in this study are among the most commonly accepted measures of attitudes towards persons with disabilities, there are unfortunately no contemporary norms for any of them.

However, recent studies using the scales in similar populations can serve as a preliminary basis of comparison. In general, the attitude scores of the nursing students towards people with physical disabilities in our study were remarkably similar to those reported in international studies. For instance, nursing students' scores on the SADP were slightly

What is already known about this topic

- Attitudes of healthcare professionals are important in the rehabilitation and self-acceptance of people with disabilities.
- Healthcare professionals may have attitudes similar to or even worse than the often negative and non-accepting attitudes in the community.
- It is important that nurses maintain or develop positive attitudes towards people with disabilities early during their education.

What this paper adds

- Nursing students had more positive and supporting attitudes towards people with disabilities than their non-nursing peers.
- Having a relative or friend with a physical disability was a more powerful predictor of a positive attitude than previous experience or frequency of contact.
- The Attitude Toward Disabled Persons Scale and the more contemporary and shorter Scale of Attitudes Toward Disabled Persons give very similar results, suggesting that the latter suffices to measure attitudes towards physical disabilities.

Implications for practice and/or policy

- Further research is needed to establish contemporary normative values for scales measuring attitudes towards people with disabilities.
- Educational interventions aimed at improving attitudes towards people with disabilities should focus more on forms of contact beyond the context of formal care relationships.

higher than those reported by US nursing students (Tervo *et al.* 2004). Also, scores on the ATDP-A were very close to the preintervention scores of US nursing students as reported by White *et al.* (2000) and those of New Zealand nursing students (Seccombe 2007b), although clearly lower than those of the undergraduate US nursing students reported by Goddard and Jordan (1998). Although no previous researchers have used the CLAS-MR to assess attitudes of nursing students towards people with intellectual disabilities, scores on this scale were reasonably comparable, albeit somewhat more negative, than those of US community-living staff members (Henry *et al.* 1996a) and Canadian senior psychiatry residents (Ouellette-Kuntz *et al.* 2003). This suggests

that, overall, the attitudes of Dutch nursing students are at least as positive and supportive as those of their international counterparts. Consequently, the results do not indicate a need for immediate curriculum changes or attitude interventions in Dutch nursing schools. However, it could be argued that attitudes towards people with disabilities should always be an integral part of the education of nurses. For this purpose, the present results offer interesting clues for the effective training of such attitudes.

For instance, our results confirm recent findings that the form of contact with people with disabilities is a better predictor of attitudes than the quantity of contact or experience within a caregiver–receiver relationship (Lyons 1991, McConkey & Truesdale 2000, Horner-Johnson *et al.* 2002, Stachura & Garven 2007). This is an important finding, since educational programmes or interventions that focus exclusively on providing more functional contact or working experience with people with disabilities may not be as effective in changing attitudes as previously thought; it may also partially explain the contradictory results found in previous attitude intervention programmes.

Conclusion

In sum, this study showed that Dutch nursing students have more positive and supporting attitudes towards people with disabilities than their non-nursing peers. Nursing students' attitudes appear reasonably positive and in line with those reported in international studies. However, future research should focus on establishing normative values for attitude scales before more firm conclusions can be drawn about the appropriateness of nursing students' attitudes. Finally, educational programmes or interventions aimed at improving attitudes towards physically disabled people may need to include more attention to forms of contact beyond the context of formal care relationships to be most effective.

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Conflict of interest

No conflict of interest has been declared by the authors.

Author contributions

PTK, JD, GB and JR were responsible for the study conception and design. JD and GB performed the data

collection. PTK and ET performed the data analysis. PTK and JR were responsible for the drafting of the manuscript. JD, ET and GB made critical revisions to the paper for important intellectual content. GB and JR supervised the study.

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