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Faculteit Revalidatiewetenschappen

master in de revalidatiewetenschappen en de kinesitherapie

Masterthesis

The perception of Flemish physiotherapists on the clinical examination and treatment of neck pain: vignette study

Nick Daniels
Griet Segers

Scriptie ingediend tot het behalen van de graad van master in de revalidatiewetenschappen en de kinesitherapie, afstudeerrichting revalidatiewetenschappen en kinesitherapie bij musculoskeletale aandoeningen

PROMOTOR :

Prof. dr. Sarah MICHIELS

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Daniels Nick, Segers Griet

Research Context

This master's thesis is conducted within the research context of Prof Dr. Sarah Michiels at the University of Hasselt. This study explores the perceptions and attitudes of Flemish physiotherapists regarding the treatment and education of neck pain. Under the supervision of PhD student Sara Demoen, this study delves into the multifaceted landscape of the perception of Flemish physiotherapists on the clinical examination and treatment of neck pain.

We wrote everything together, and worked as a team where the tasks were equally divided. When the surveys were completed, Sara Demoen delivered us the data. Just as the writing part, the statistical analysis was also performed together. We want to thank everyone who took the time to participate in our surveys.

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Abstract

Background: Neck pain prevalence has surged due to an aging population, becoming a major global disability cause. Traditional treatments, like manual therapy and exercise, are effective but have limitations. While TENS and NSAIDs offer minimal benefits, modern approaches favor a biopsychosocial model, integrating cognitive and emotional aspects into pain perception.

Objective: This study aims to explore physiotherapists' perspectives on neck pain management, their adherence to the BPS model, and differences in treatment beliefs among physiotherapy students, recent graduates, and experienced practitioners.

Methods: A cross-sectional vignette study was conducted online, involving Dutch-speaking physiotherapists and students from Flanders. Participants completed the Pain Attitudes and Beliefs Scale for Physical Therapists (PABS-PT), and responded to five clinical vignettes. Data were analyzed using descriptive statistics, logistic regression, and graphical representation.

Results: The study included 67 participants, revealing varying levels of adherence to the BPS model, with factors such as age, years of experience, and year of graduation significantly influencing treatment preferences and attitudes.

Younger and less experienced physiotherapists exhibited stronger emphasis on biopsychosocial factors and activity limitations in neck pain management compared to older and more experienced counterparts. They also demonstrated a broader recognition of clinical flags in response to clinical cases. Additionally, active physiotherapists were more likely to identify only yellow flags, suggesting a nuanced perception influenced by their activity level. Significant interactions were observed between age, years of practice, and year of graduation, indicating multifaceted influences on treatment approaches among physiotherapists.

Conclusion: This study reveals age and experience-related variations among Flemish physiotherapists in attitudes towards neck pain management. Younger physiotherapists show stronger alignment with biopsychosocial principles, while experience influences clinical decision-making, emphasizing the importance of ongoing education for optimal patient outcomes.

Keywords: neck pain, biopsychosocial (BPS) model, treatment beliefs, perspectives

1. Introduction

The prevalence and disability of neck pain have noticeably increased over the past 25 years, due to the aging of the population, it will likely increase further. In most countries and age groups neck pain is the leading cause of years lived with disability, along with back pain. Neck pain and low back pain were ranked in fourth place of leading cause of disability-adjusted life years (DALYS), in 2015. (Hurwitz et al., 2018)

For the prognosis of chronic non-specific neck pain, several indicators may lead to a less favorable outcome. These indicators include factors such as age, concomitant low back pain, severe pain, and a history of previous attacks, which are associated with more pain, lower levels of functionality, less overall improvement, increased utilization, and more lost workdays, although the level of evidence for these factors is low. Additionally, Tsakizidis et al. suggests that pathologic radiological findings (e.g. degenerative changes in disc or joints) are not associated with a worse prognosis. (Tsakitzidis et al., 2009)

The prescribed therapeutic interventions encompass manual therapy (comprising manipulation and/or mobilization) within a multimodal approach, incorporating exercises that demonstrate efficacy in addressing chronic non-specific neck pain, both in terms of pain reduction and functional improvement. Home exercises, group exercises, and neck school programs exhibit limited evidential support and lack endorsement from the scientific literature. (Tsakitzidis et al., 2009) Decreased pain and disability in chronic neck pain can effectively be achieved with both isometric strength training and dynamic endurance training. Thereby controlled endurance and strength training of the neck muscles proves to be much more effective than aerobic and stretching exercises. (Ylinen et al., 2003)

Regarding electrical muscle stimulation, such as TENS or other electro therapies, there exists limited evidence indicating no discernible benefit in terms of short-term pain relief. Lastly, medications such as NSAIDs exhibit a more pronounced effect on pain reduction compared to a placebo; however, the extent of their advantages relative to other treatment modalities, such as manipulation, remains unclear. (Tsakitzidis et al. 2009)

In the past, the focus of the treatment of pain was mainly on the tissue damage or structural abnormalities, also called the biomedical approach. (Miki et al., 2021) This model posits that pain and disability result from physical pathology. Given that pain indicates pathology or

tissue damage, a physiotherapist with a predominantly biomechanical orientation toward pain is likely to tailor their treatment according to the patient's pain levels. This approach focuses primarily on identifying and treating the underlying physical pathology causing the pain. (Houben et al., 2005) Currently, there is a growing preference for the biopsychosocial approach. Pain is now understood to be more complex, involving personal perception that can be intensified by anxiety and misconceptions. In addition, nociplastic pain has also been identified, this type of pain indicates the importance of cognition and emotions. Rather than a biomedical model, these facts led to the establishment of a biopsychosocial (BPS) model. (Miki et al., 2021) Physiotherapists recognize that pain is not solely a symptom of pathology or tissue damage, but is also influenced by social and psychological factors. Consequently, pain-related disability may persist even after the initial physical issue has resolved. Under this model, treatment emphasizes increasing the patient's activity levels based on a predetermined schedule. To distinguish between a biomedical versus a biopsychosocial approach to treatment, the Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) is employed. (Houben et al., 2005)

Numerous previous studies on low back pain have concentrated on examining physiotherapists attitudes and beliefs related to chronic low back pain. Over the years, cohorts of physiotherapy students have exhibited a shift in their attitudes and beliefs towards a more biopsychosocial approach, aligning more closely with guideline-adherent recommendations for managing chronic low back pain. (Munneke et al., 2024) The most commonly employed treatment strategy by physiotherapists for chronic non-specific low back pain (CNS LBP) was home exercise programs, followed by patient education. Nonetheless, physiotherapists often utilized treatment strategies that were supported by limited evidence. (Alshehri et al., 2020)

The goal of this study is to question the physiotherapists perspectives on the management of neck pain and their application in clinical practice; to examine their knowledge, attitudes and beliefs concerning the biopsychosocial approach of neck pain; and to assess their recommendations and advice about physical activity and posture. Additionally this study looks into the presence of potential differences in treatment beliefs and advice between physiotherapy students, recently graduated physiotherapists and physiotherapists with more work experience.

2. Methods

2.1 Design

To answer the research question, a cross-sectional study was set up. A vignette study is used. “A vignette is a short, carefully constructed description of a person, object, or situation representing a systematic combination of characteristics.” (Steiner & Atzmüller, 2006). Five different vignette scenarios were used and shown as video cases. Participants answered additional questions about their perception of the clinical examination and treatment of neck pain. The cross-observational study received approval from the ethics committee Uhasselt. The STROBE guidelines for cross-sectional studies were used to report the results of this study. (Cuschieri, 2019)

2.2 Setting

This research was conducted in an online environment. Participants used their personal internet devices such as computers, tablets, or smartphones to access a web platform (https://qualtrics.com) to access study information. Following their informed consent, participants were then invited to fill out the online survey. (The study occurred digitally, specifically on the Qualtrics platform (https://qualtrics.com). People could use multiple devices, like computers or smartphones, to reach this platform. Once they gave their approval, they had the chance to view our video content and then carry on to complete our survey.

2.3 Participants

The survey was distributed to the participants via social media platforms, flemish physiotherapy associations, university networks, etc. Eligibility criteria were Dutch-speaking physiotherapists, or physiotherapy students, working or studying in Flanders. Exclusion criteria were not being in possession of an internet-connected device. Recruitment took place between August 2023 and September 2023.

Inclusion criteria

- All active independent physiotherapists treating patients with musculoskeletal (MSK) neck complaints (under 65 years old) in Flanders;
- physiotherapy students at a Flemish University (aged 18 and above).

Exclusion criteria

- Language barrier preventing the completion of the Dutch questionnaire;
- physiotherapists who are not actively practicing or are retired (over 65 years old);
- physiotherapists who do not treat MSK neck complaints and instead focus on other specializations such as neurological rehabilitation, pediatric rehabilitation, internal physiotherapy, etc.

2.4 Outcomes

This study included several questions about sociodemographic factors, one questionnaire: namely the Pain Attitudes and Beliefs Scale for Physical Therapists (PABS-PT), and five clinical vignettes with additional questions about the physiotherapists' perceptions on clinical examination and treatment. The five vignettes included different kinds of neck pain, with different comorbidities, and psychosocial factors. The survey was available in Dutch.

2.4.1 Sociodemographics

At the start of the online survey, different sociodemographic factors were assessed. Personal factors were identified:

- age (18-65);
- currently active as physiotherapist;
- year of graduation.

2.4.2 The Pain Attitudes and Beliefs Scale for Physical Therapists (PABS-PT)

The PABS-PT is a self-administered tool created to differentiate between a primarily biomedical approach and a biopsychosocial treatment orientation among physiotherapists in their management of lower back pain. (Houben et al., 2005)

The questionnaire comprises two components that differentiate between a biomedical approach (10 items) and a biopsychosocial treatment orientation (9 items). Therapists are required to assess their treatment preferences by rating statements on a 6-point Likert scale, ranging from 'completely disagree' to 'completely agree.' The PABS-PT has found utility in various settings and among diverse healthcare provider groups, since its original development. (Mutsaers et al., 2012) The PABS-PT was initially designed for low back pain; this questionnaire has been adjusted to a version for neck problems. This questionnaire didn't use a 6-point Likert scale; the participants only needed to answer 'true or not true' on the statements. The questionnaire is added in Appendix 1.

2.4.3 Clinical Vignettes

In this study, five clinical vignettes were used. The vignettes were shown as video cases with a duration of less than two minutes. The physiotherapists were played by physiotherapy students of Hasselt University, and the patients were played by volunteers who gave their consent for using the videos in an online survey. In the first two cases, the focus lies on anamnesis and screening of neck problems. The participant was asked how important it was to ask more questions in the anamneses about the ICF factors, on a scale from one (not important) to five (very important). The participant also needed to answer an open question: 'are there additional matters, not listed, that should be considered?'. Lastly, the participant was asked which flags were present (yellow, red, orange, blue or black). The first case describes a patient with chronic neck pain caused by a whiplash. In addition, the patient complains about constant headache. The second case describes a patient with acute neck pain; the same questions about the anamnesis were asked of the participant.

In the third and fourth case the emphasis lies on the treatment of neck pain. Both the cases were about chronic neck pain and the following questions about the treatment were asked: the participant was asked which tests they would do in this case, during their clinical examination (inspection, palpation, /a/ functional, /p/ functional, isometric tests, muscle

length tests, mobility tests, neuromuscular tests, others). The second question asked the participants how important the following matters are part of the treatment plan; rest, heath, massage, dry needling, manual therapy, manipulation, exercise: deep neck flexors, exercise: deep neck extensors, exercise shoulder stabilizers. With choices ranging from one (not important) to five (very important).

The fifth case is about a patient with chronic diffuse neck pain and high workload. The questions the participant received are about giving info and advice to the patient. The first question asked the participants about their opinion on importance of giving info and advice to the patient about the following matters; recommend limiting neck movement, advise against neck collar, advice about posture in the car, info about negative influence of stress, advice against work during presence of pain, advice to rest until pain is gone, advice against no movement of the neck, advice about posture sitting at a desk, recommend neck movement, emphasize positive influence of active lifestyle. With a score ranging from one (not important) to five (very important). The second question was an open question: 'Are there any additional matters not listed about which you would provide further information and advice to this patient?'. The cases are added in Appendix 2.

Table 1. Answer possibilities questionnaires

	Answer possibilities
PABS-PT	true (1) false (2)
Case-questionnaire	unimportant (1) rather unimportant (2) neutral (3) rather important (4) important (5)

2.4.4 Statistical analysis

The data was downloaded from Qualtrics and sorted using JMP pro 17.2.0. All 67 participants' data was used. Both completed and uncompleted data from the participants were used in the statistics.

Descriptive statistics were used for the PABS-PT questionnaire and for vignettes. To test the significance of the influence of age, years of experience, years graduated, and active status as a physiotherapist on the answers to the PABS-PT and the vignettes, logistic regression with a significance level of 0.05 is used. To graphically represent the distribution between the groups, one sample T-test was used and the graph builder.

3. Results

3.1. sociodemographics

A total of 67 physiotherapists completed the questionnaire and were included in the data analysis. Among them, 51 fully completed the Physiotherapists' Attitudes and Beliefs Scale for Physical Therapists (PABS-PT), while 28 fully completed the five cases provided. Notably, only 52 of the initial 67 participants provided their age information, 26 provided their years of practice and 63 provided their work setting. (see Figure 1)

The majority of physiotherapists were aged 20-25, comprising 52% of participants, followed by 26-30 years olds at 21%, 31-45 years olds at 19%, and those aged 45 and above 8%. (see Table 2)

The distribution of years of practice among physiotherapists was balanced, with 38% practicing for 0-5 years, 31% for 6-15 years, and another 31% for 15 years or more. (Table 2)

The predominant work setting among the participants was categorized as 'none' owing to the inclusion of students, comprising 48% of respondents. This was followed by group practice, representing 28% of participants, private practice at 21%, and hospital accounting for 3% of respondents. (see Table 2)

Among the surveyed physiotherapists, 41% reported treating neck pain. Notably, 3% of respondents, primarily comprising hospital employees, indicated that they did not treat neck pain. Additionally, 56% of participants who did not provide a response were students. (Table 2)

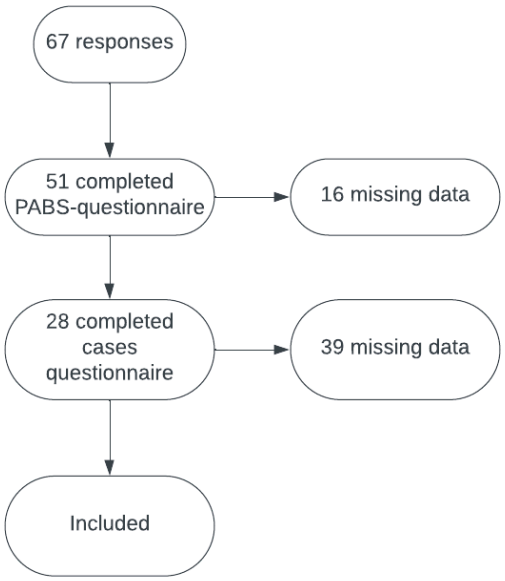

Figure 1. Flow diagram concerning the recruitment of physiotherapists.

Table 2. Descriptive statistics for sociodemographic questionnaire results.

		Mean (SD)	N (%)
Number of participants	Total	67	100%
	completed PABS	51	34%
	completed the cases	28	19%
Age (Mean)		28	
		(52)	
Age (year)	20-25	27	52%
Age (by group)	26-30	11	21%
	31-45	10	19%
	45+	4	8%
Years of practice (mean)		5	
		(26)	
Years of practice	0-5	10	38%
	6-15	8	31%
	15+	8	31%
		(63)	
Work setting	Private practice	13	21%
	Group practice	18	28%
	Hospital	2	3%
	Student	30	48%
Treats neck pain		(67)	
	Yes	28	41%
	No	2	3%
	No answer	37	56%

3.2. Knowledge, Attitudes and Beliefs of Physiotherapists

Table 3. Outcomes of Logistic Regression Analysis on the Impact of Age, Professional experience, Graduation year, and Active Practice Status on PABS-PT Scores

statistically significant relationship	PABS-PT question	P-waarde	Odds Ratio
Age	Question 6	0.0170	1.69
	Question 10	0.0153	0.94
	Question 13	0.0047	1.11
	Question 16	0.0201	1.08
	Question 17	0.0001	59963
Years of practice	Question 6	0.0221	1021406
	Question 10	0.0148	0.93
	Question 13	0.0061	1.12
	Question 16	0.0373	1.07
	Question 17	<0.0001	7986055
Year of graduation	Question 1	0.0053	1.13
	Question 6	0.0036	2.13
	Question 9	0.0132	1.09
	Question 10	0.0054	1.09
	Question 17	0.0036	0.78
Active as physiotherapist	All Questions significant	<0.05	>1

Table 4. Outcomes of Logistic Regression Analysis on the Impact of Age, Professional experience, Graduation year, and Active Practice Status on Case Responses

statistically significant relationship	cases question	P-waarde	Odds Ratio
Age	Case 1 question 1-7	0.0302	1.07
	Case 1 question 1-8	0.0267	1.07
	Case 4 question 2-1	0.0057	1.20
	Case 5 question 1-7	0.0472	0.86
Years of Practice	Case 1 question 1-7	0.0388	1.07
	Case 1 question 1-8	0.0312	1.08
	Case 2 question 3	0.0123	171.14
	Case 4 question 2-1	0.0239	1.16
Year of graduation	Case 2 question 1-7	0.0460	1.31
	Case 4 question 2-1	0.0063	0.31
	Case 4 question 2-2	0.0025	0.49
	Case 4 question 2-4	0.0104	0.60
	Case 5 question 1-1	0.0253	$-6.61*10^{27}$
	Case 5 question 1-6	0.0253	$-6.61*10^{27}$
Active as Physiotherapist	Case 1 question 1-7	0.0043	2.87
	Case 1 question 1-8	0.0003	4.91
	Case 2 question 1-1	0.0105	2.59
	Case 2 question 1-7	0.0010	4.13
	Case 2 question 1-8	0.0196	2.41
	Case 2 question 3	0.0123	7795,06

The results of the PABS-Pt were analyzed according to various factors, including age, years of practice, year of graduation, and current status as an active physiotherapist or student.

Physiotherapists who responded to the questions were then sub-grouped on age, work, setting, whether they treat neck pain, and years of experience as a physiotherapist.

3.2.1. Age and Experience-Related Variations in Physiotherapists' Attitudes Towards Neck Pain Management: Insights from the PABS-PT

The graphical representation of the statistical analyses are added in Appendix 3. Statistically significant differences ($p < 0.05$) were found between age and responses to the PABS-PT for questions 6 (a),10 (b),13 (c),16 (d) and 17 (e). This difference was most pronounced in question 10 (b) ("Patients who suffer from neck pain should avoid activities that strain the neck."), where 80% respondents under the age of 45 disagreed, while 80% of physiotherapists aged 45 and older agreed.

For the biopsychosocial aspect, question 17 (e) was asked: "Mental stress can cause neck pain even in the absence of tissue damage". All physiotherapists under the age of 45 agreed with this statement, while among those aged 45 and above, the responses were evenly split.

Furthermore, significant differences ($p < 0.05$) were found between years of practice and responses for the PABS-PT, predominantly for the same questions as age. Notably, for question 13 (h) ("If the treatment does not result in a reduction of neck pain, there is a high risk of severe long-term restrictions"), it was observed that 20 out of 37 physiotherapists with 0-5 years of experience answered yes. In contrast, within the 6-15 years of experience range and the 15+ years of experience range, these values were 1 out of 7 and 1 out of 8, respectively.

For PABS-PT scores, age significantly impacts several questions. Questions 6 ($p = 0.0170$, OR = 1.69) suggests a 69% higher likelihood of a higher score per unit increase in age. Question 13 ($p = 0.0047$, OR = 1.11) and question 16 ($p = 0.0201$, OR = 1.08) indicate 11% and 8% higher likelihoods, respectively, per unit increase in age. An anomalously high odds ratio is found for question 17 ($p = 0.0001$, OR = 59963), potentially indicating a data analysis error. Refer to Table 4 and Table 3 for a detailed summary of these results.

3.2.2. Age-Dependant Variations in Physiotherapists' Perceptions of Activity Limitation, Functional Impairment, and Rest in Neck Pain Management: An Analysis from Cases 1-5

Significant differences ($p < 0.05$) were also found between the age of physiotherapists and their response to questions 1_7 (k) and 1_8 (l) in case 1, which pertained to the importance of activity limitation and functional impairment. Physiotherapists aged 20-25 and 26-30 tended to rate these factors as important or very important, while older physiotherapists more frequently rated them as neutral or important.

In question 2_1 of case 4 (m), there was a significant difference ($p < 0.05$) in responses regarding the importance of rest in the case of neck pain. Among physiotherapists aged 45 and older, 100% considered rest to be very unimportant. In contrast, within the 20-25 age group, there was no clear consensus: 2 out of 21 rated it as very unimportant, 8 out of 21 were neutral, and 5 out of 21 considered it important

The logistic regression analysis indicates that age significantly influences various case responses. For Case 1, question 1-7 ($p = 0.0302$, OR = 1.07) and Case 1, question 1-8 ($p = 0.0267$, OR = 1.07), a positive relationship is observed, suggesting that each unit increase in age is associated with a 7% higher likelihood of achieving a higher score. Similarly, case 4, question 2-1 shows a stronger positive relationship ($p = 0.0057$, OR = 1.20), indicating a 20% higher likelihood per unit increase in age. Conversely, a negative relationship is noted for Case 5, question 1-7 ($p = 0.0472$, OR = 0.86), implying a 14% lower likelihood of a higher score with increasing age.

3.2.3. Impact of Years of Experience on Physiotherapists Identification of Clinical Flags in Video Case Assessment: An Analysis from Cases 1-5

Additionally, significant differences ($p < 0.05$) were observed between years of experience and responses to cases 1-5. For case 2, question 3 (q), which concerned the identification of flags in the video case, physiotherapists with 6-15 years of experience and those with more than 15 years of experience consistently identified only the yellow flag. In contrast, physiotherapists with less than 5 years of experience or students exhibited less conformity in

their responses, identifying predominantly yellow flags but also including red, blue and black flags.

The analysis reveals significant relationships between years of practice and responses to case questions. For case 1, question 1-7 (p = 0.0388, OR = 1,07) and case 1, question 1-8 (p = 0.0312, OR = 1.08), a positive relationship is evident, meaning each additional year of practice increases the likelihood of a higher score by 7% and 8%; respectively. Case 2, question 3 (p = 0.0123, OR = 171,14) presents a notably high odds ratio, suggesting a substantial increase in likelihood with more years of practice. Case 4, question 2-1 also shown a significant positive relationship (p = 0.0239, OR = 1.16)

3.2.4. Influence of Physiotherapists Activity Levels on Their Perception of Clinical Flags: An Analysis from Cases 1-5

Following the relationship between the activity level of the physiotherapist and their responses to cases 1-5, significant differences ($p < 0.05$) were observed for case 1, questions 1_7 (s) and 1_8 (t), similar to the differences found for age. Additionally, in case 2, question 1_1 (u) regarding the importance of red flags, non-active physiotherapists or students tended to rate these as neutral or not important, whereas active physiotherapists were more likely to consider red flags as important or very important.
Finally, in case 2, question 3 (x), all non-active physiotherapists or students unanimously agreed that yellow flags were involved in the case. However, among the physiotherapists, there was no consensus on the flags involved, as they also identified red, blue and black flags.

Finally, the analysis demonstrates that being an active physiotherapist has a strong positive influence on responses to various case questions and all PABS-PT scores. For Case 1, question 1-7 (p=0.0043, OR = 2.87) and Case 1, question 1-8 (p = 0.0003, OR = 4.91), the likelihood of a higher score is 187% and 391% higher, respectively, for those actively practicing as physiotherapists. Case 1, question 1-1 (p = 0.0105, OR = 2.59) and Case 2, question 1-7 (p = 0.0010, OR = 4.13) show significant positive relationships, with increased likelihoods of 159% and 313%, respectively. Case 2, question 1-8 (p = 0.0196, OR = 2.41) also confirms this trend,

with a 141% higher likelihood of a higher score. For PABS-PT scores, being an active physiotherapist is significantly associated with all questions, with p-values < 0.05 and odds ratios > 1, indicating consistently higher scores for active practitioners.

3.2.5. Other Interactions

There were also statistically significant interactions ($p < 0.05$) found between age and years of practice, age and year of graduation, and year of graduation and years of practice.

4. Discussion

The design of this study was to investigate physiotherapists' perspectives on managing neck pain, their application of the biopsychosocial (BPS) model, and their recommendations regarding physical activity and posture. Additionally, it examines the differences in treatment beliefs and advice among physiotherapy students, recent graduates, and experienced professionals.

The results revealed that there is no consensus around Flemish physiotherapists about the treatment and beliefs of neck pain. Differences were shown between different age groups, years graduated, years of experience and active as physiotherapist vs student. There is more conformity within the age groups and years experience, namely physiotherapists with higher age and more years of experience choose the same answers. Whilst in the younger age groups and physiotherapists with less experience, there is less conformity between the answers on the PABS-PT.

The research indicates that the biopsychosocial model is more frequently utilized by younger physiotherapists and students. This suggests a notable shift in the approach to examination and treatment of neck pain between the younger and older generations of physiotherapists. Younger practitioners tend to integrate psychosocial factors, such as mental stress and social context. In contrast, older physiotherapists, who may have been trained under a more traditional biomedical model, appear to focus more on the physical and mechanical aspect of neck pain. This divergence in approaches underscores the evolution of physiotherapy education and its impact on clinical practice, highlighting the need for continued professional development to bridge these generational gaps and ensure comprehensive patient care.

In addition, Van Dijk et al. identified several barriers that physiotherapists face in applying a biopsychosocial (BPS) approach to treating patients with chronic pain in primary care. The key themes of these barriers and facilitators include knowledge, skills and attitudes, environmental context and resources, role clarity, confidence, therapeutic alliance, and patient expectations.

Firstly, physiotherapists may exhibit deficiencies in both knowledge and skills pertinent to the application of a biopsychosocial (BPS) paradigm. A substantial proportion of practitioners demonstrate a restricted comprehension of the BPS model and its relevance in managing musculoskeletal pain. This knowledge deficit extends to competences in evaluating and addressing psychosocial determinants. Consequently, physiotherapists may default to a biomedical stance, prioritizing the resolution of physical symptoms while neglecting the broader psychosocial milieu of pain.

Secondly, attitudes wield considerable influence over clinical practices. Physiotherapists espousing a predominantly biomedical perspective may perceive psychosocial factors as ancillary or less germane to pain assessment and management. Such attitudes impede the integration of psychosocial considerations into clinical decision-making processes and treatment regiments.

Thirdly, a paucity of confidence in applying a BPS approach can inhibit physiotherapists willingness to engage with psychosocial facets of care.
Fourthly, environmental constraints, encompassing factors such as time constraints, inadequate reimbursement for psychosocial interventions, and deficient organizational support, pose formidable barriers to operationalization of BPS strategies in clinical settings.

Lastly, patient expectations, oftentimes shaped by societal norms and prior healthcare encounters, wield considerable sway over physiotherapists treatment decisions. Unrealistic patient expectations for passive interventions or expeditious remedies may run counter to the objective of a BPS approach, engendering discord with therapeutic alliance.

These barriers collectively underscore the underutilization of a BPS approach in clinical contexts, underscoring the imperative for targeted interventions aimed at ameliorating knowledge, bolstering knowledge, clarifying role boundaries, providing necessary assistance and resourcing to physiotherapists aiming to incorporate psychosocial elements into their care delivery models. (Van Dijk et al., 2023)

The results can be compared to other studies, where Carlesso et al. indicates that physiotherapists widely prefer interventions for neck pain with a strong evidence base for effectiveness and that they also use a variety of other interventions with limited support or conflicting evidence. This indicates a need for research to address gaps in evidence related to inconsistent practice patterns and to enhance knowledge translation in order to decrease the use of certain interventions that have been proven ineffective. (Carlesso et al., 2014)
The comparison between the study conducted by Carlesso et al. and this study reveals several key similarities and differences.

Similarities include the examination of healthcare professionals' practices and perceptions concerning neck pain management, along with the recognition of variations in treatment approaches based on demographic factors like age and years of practice. Both studies underscore the significant influence of professional experience on clinical decision making.
However, there are notable differences. Carlesso et al. encompassess a broader spectrum of healthcare professionals, including physiotherapists and chiropractors, while this study focuses exclusively on physiotherapists.

Additionally, Carlesso et al. provides an extensive overview of treatment modalities and their utilization frequencies, contrasting with this study's deeper exploration of specific factors such as age, years of practice, and perceptions of clinical flags. Furthermore, our study incorporates case-based analyses to probe physiotherapists perspectives on activity limitation, functional impairment, and clinical flag identification, aspects not addressed by Carlesso et al. Lastly, while Carlesso et al. offers insights into the utilization and indications of various treatment modalities, this study concentrates more on understanding the attitudes and perceptions of physiotherapists regarding neck pain management.

In conclusion, both studies offer valuable insights into neck pain management by healthcare professionals, emphasizing the importance of considering demographic and professional variables in clinical practice and education. (Carlesso et al., 2014)

4.1. Limitations and strengths

The study encountered certain limitations. The shorter version of the PABS-PT utilized in the research was not subjected to validation or further investigation, it also used a binary response format in contrast to the original five-option scale. Also, the questionnaire underwent a reduction in length from 36 items to 20 items. These modifications may potentially introduce factors that could impact the questionnaire's validity, as no reassessment of validity was conducted subsequent to the alterations. Additionally the vignette of neck pain was specifically developed for this study and did not undergo validation procedures. Consequently, it is imperative that future studies include analyses to assess the validity of these components.

The recruitment process aimed for physiotherapists to complete the entire vignette; however, a significantly low proportion of participants adhered to this requirement. Notably, a majority of the respondents who completed the vignette were student physiotherapists. The distribution of the questionnaire primarily targeted online platforms, notably Facebook groups, frequently by a predominantly student demographic with relatively fewer experienced physiotherapists.

To ensure a more balanced representation of both experienced physiotherapists and students in future research endeavors, researchers could adopt a multi-faceted recruitment strategy. This strategy might involve leveraging a diverse array of recruitment channels beyond social media, such as professional associations, clinical settings, and academic institutions. Additionally, targeted outreach efforts directed towards experienced physiotherapy practitioners, including invitations through professional networks and conferences, could help mitigate potential sampling biases and ensure broader participation across different experience levels within the profession.

This observation raises concerns regarding the credibility of the study's findings.
Consequently, the graphical representation at times offers a potentially misleading portrayal. Particularly notable is the scenario wherein 21 respondents contributed to the dataset. Here, a discernible trend emerged: individuals within the younger age bracket, aged 20-25 years,

exhibited a notably higher level of participation compared to their older counterparts aged 45 years and above, who contributed responses from merely 1 or 2 individuals.

4.2. Future Research

Further investigation is warranted to deepen our understanding of the varying perceptions among Flemish physiotherapists regarding the clinical examination and treatment strategies for neck pain. This research could shed light on potential disparities and facilitate the development of tailored approaches in clinical practice.

Another Research that would be interesting in this subject would be the examining of the utilization of the biopsychosocial model across age categories and specializations:
Future studies should investigate the utilization of the biopsychosocial model among physiotherapists across different age categories and specialized fields. This inquiry could elucidate whether further education on this model is necessary or if it is already widely integrated into clinical practice.

Lastly it could be interesting to include cultural and socioeconomic factors into the study and examine how cultural and socioeconomic factors influence perceptions of neck pain and treatment-seeking behavior, as well as the implications for delivering culturally sensitive and equitable physiotherapy care.

5. Conclusions

This study highlights significant age and experience-related variations in Flemish physiotherapists' attitudes towards neck pain management, as assessed using the Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT).

Younger physiotherapists (under 45) demonstrated a stronger alignment with biopsychosocial principles compared to their older counterparts, particularly evident in their attitudes towards activity limitation and the psychological aspects of neck pain.

Less experienced physiotherapists (0-5 years) tended to emphasize the risk of long-term restrictions if treatment did not alleviate pain, suggesting a focus on immediate outcomes.

The perception of activity limitation and rest as treatment factors varied significantly with age, with younger physiotherapists rating these factors as more important compared to older physiotherapists.

Experience influenced the identification of clinical flags, with more experienced physiotherapists consistently identifying yellow flags compared to less experienced counterparts.

Additionally, the activity level of physiotherapists influenced their perceptions of clinical flags, with active physiotherapists more likely to consider yellow flags as important.

These findings emphasize the need for ongoing education and training to ensure that physiotherapists of all ages and experience levels can effectively integrate biopsychosocial approaches into neck pain management, ultimately improving patient outcomes.

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7. Appendix

Appendix 1. PABS_PT

PABS-PT Questions	waar	onwaar
1. Toegenomen pijn wijst op nieuwe weefselschade of spreiding van reeds bestaande schade	◯	◯
2. Pijnreductie is een voorwaarde voor het herstel van normaal functioneren	◯	◯
3. De ernst van de weefselschade bepaalt het niveau van de pijn	◯	◯
4. Het is de taak van de kinesist om de oorzaak van de nekpijn weg nemen	◯	◯
5. Als de nekpijn toeneemt in ernst, pas ik onmiddellijk overeenkomstig de intensiteit van mijn behandeling aan	◯	◯
6. Als de patiënt klaagt over pijn tijdens de oefening, maak ik me zorgen dat er schade veroorzaakt wordt	◯	◯
7. Pijn is een nociceptieve stimulus, wijzend op weefselschade	◯	◯
8. Het beste advies voor nekpijn is “wees voorzichtig” en “maak geen onnodige bewegingen”	◯	◯
9. Patiënten met nekpijn voeren bij voorkeur enkel pijnvrije bewegingen uit	◯	◯
10. Patiënten die aan nekpijn lijden moeten activiteiten die belastend zijn voor de nek vermijden	◯	◯
11. Nekpijn wijst op de aanwezigheid van een organisch letsel	◯	◯

12. Er wordt niet genoeg moeite gedaan om de onderliggende organische oorzaken van nekpijn te vinden	○	○
13. Als de behandeling niet resulteert in een reductie van de nekpijn, dan is er een hoog risico op ernstige restricties op lange termijn	○	○
14. Reductie van de dagelijkse fysieke inspanning is een significante factor in de behandeling van nekpijn	○	○
15. De oorzaak van nekpijn is onbekend	○	○
16. Functionele beperkingen geassocieerd met nekpijn zijn het resultaat van psychosociale factoren	○	○
17. Mentale stress kan nekpijn veroorzaken zelfs in de afwezigheid van weefselschade	○	○
18. Kennis omtrent de weefselschade is niet nodig voor een effectieve behandeling	○	○
19. Er is geen effectieve behandeling om nekpijn te elimineren	○	○
20. Een patiënt die lijdt aan ernstige nekpijn zal baat hebben van lichaamsbeweging	○	○

Appendix 2. Vignettes

CASE 1

50 jarige vrouw, 6 maanden post whiplash. Is al 8 jaar arbeidsongeschikt omwille van chronische lage rugklachten.

Pijn varieert heel hard in locatie; loopt van suboccipitaal tot in de hand. Algemene hypersensitiviteit (ook voor prikkels zoals licht en geluid).

Scenario:

- Kine: Dag Ilse, vertel me eens waarom je hier bent?
- Patiënt: Ik heb 6 maanden geleden een whiplash gehad en ik heb nog steeds veel last van mijn nek.
- Kine: Waar voel je die pijn precies?
- Patiënt: Ik voel het van onder mijn schedel, in heel mijn nek en het straalt uit tot in mijn rechterhand.
- Kine: En hoe zou u deze pijn beschrijven?
- Patiënt: Het voelt heel vermoeiend aan, ik voel me zo moe van elke dag pijn te hebben.
- Kine: Zijn er bepaalde bewegingen waarbij het erger wordt?
- Patiënt: Elke beweging met mijn nek doet pijn.
- Kine: Zijn er bepaalde dingen die je probeert om de pijn te doen afnemen?
- Patiënt: Ik neem elke dag 2 dafalgans, leg warmte en probeer mijn nek zo stil mogelijk te houden.
- Kine: Hoe verloopt de pijn overdag? Sta je ermee op, of komt het op doorheen de dag?
- Patiënt: Ik heb pijn vanaf ik opsta. Tegen de avond wordt het wel erger, hoe vermoeider ik word, hoe minder ik kan verdragen.
- Kine: Oke, zijn er nog andere plaatsen waar u klachten heeft?
- Patiënt: Mijn rug he, die is helemaal omzeep… al 8 jaar kan ik niet meer gaan werken hierdoor.
- Kine: Ik begrijp dat het niet kunnen gaan werken heel frustrerend is. Hoe voelt u zichzelf daarbij?

- Patient : Ik voel mij daardoor eigenlijk een beetje nutteloos, en heel afhankelijk van andere mensen.
- Kine: Dat begrijp ik, hebt u een beetje steun van thuis die u helpt bij huishoudelijke of andere taken?
- Patiënt: Mijn man helpt mij thuis swel en de kinderen dragen ook een steentje bij aan het huishouden.
- Kine: Zijn er voor de rest nog dingen die u wilt vertellen?
- Patiënt: Ik heb de afgelopen maandne ook veel last gehad van hoofdpijn.
- Kine: Waar voelt u deze precies?
- Patiënt: Van achteraan mijn schedel tot aan mijn ogen.
- Kine: Hoeveel zou u die scoren op 10?
- Patiënt: Toch wel een 6/10.
- Kine: Oke, en merkt u hierin verschil doorheen de dag? Of is de hoofdpijn vrij constant aanwezig?
- Patiënt: De hoofdpijn is constant aanwezig, maar wordt feller bij licht.
- Kine: Als dit oke is gaan we nu enkele testen uitvoeren.
- Patiënt: Dat is goed.

CASE 2

32 jarige vrouw met scherpe pijn in de nek (die uitstraalt in facetair gebied?). De pijn is er 2 dagen geleden in geschoten tijdens het drogen van haar haar, en sinds dat moment zit ze geblokkeerd in een rechts rotatie.

Onderzoek: ze kan niet recht naar voor kijken, moeilijk uit te voeren onderzoek want patiënt heeft heel veel pijn en laat het onderzoek moeilijk uitvoeren.

scenario: patiënt komt binnen met nek in rechts rotatie

- kine: dag Kirsten, vertel me eens wat meer over je klacht.
- Patiënt: ik was laatst mijn haren aan het drogen en plots had ik felle pijn in mijn nek en kon ik niet meer bewegen.
- Kine: hoelang is het precies geleden?
- patiënt: 2 dagen geleden.

- kine: weet je welke beweging je deed toen het erin schoot?
- patiënt: ik ben nog steeds geblokkeerd in dezelfde houding.
- Kine: lukt het om jouw nek te bewegen?
- patiënt: ik kan eigenlijk niet meer vooruit kijken, ik hou mijn hoofd sindsdien zo. (in rechts rotatie). Bewegen doet echt veel pijn.
- kine: hoe zou u de pijn beschrijven?
- patiënt: de pijn voelt heel stekend aan in mijn nek.
- kine: heeft u nog andere klachten?
- patiënt: nee, alleen in mijn nek maar ik voel ook wat pijn in mijn schouder. Dit is wel echt vervelend. Als dit niet snel verbetert, kan ik niet blijven werken.
- kine: zijn er personen die u zouden kunnen helpen met bijvoorbeeld het huishouden?
- patiënt: nee, ik sta er alleen voor.
- kine: maak u maar geen zorgen. De klacht is heel recent, het is normaal dat u dan een scherpe pijn ervaart.
- patiënt: oke, dat stelt me al wat gerust.
- kine: kan u iets doen om de pijn te verminderen?
- patiënt: nee, ik heb nog geen medicatie genomen.
- kine: heeft u al eerder dergelijke klachten gehad?
- patiënt: nee, dit is de eerste keer.
- kine: als dit ok is, gaan we nu enkele testen uitvoeren.
- patiënt: dat is goed.

CASE 3

26 jarige vrouw met nekklachten ter hoogte van trapezius en paravertebrale/suboccipitale spieren. Werkt in shiften (sociaal werk) en heeft meer dan 5 jaar dezelfde klachten. Doet geen sport, maar heeft wel een actieve levensstijl omwille van haar job.

Scenario:

- Kine: Dag Silke, vertel me eens waarom je hier bent.
- Patiënt: Ik heb al heel lang last van nekpijn, al een vijftal jaar ongeveer.
- Kine: waarom heb je nu pas besloten om contact met me op te nemen?
- Patiënt: ik ben de afgelopen 5 jaar naar een andere kine gegaan, ik ben recent verhuisd dus was op zoek naar een andere kine.

- Kine: welke behandelingen heb je al gekregen bij jouw vorige kine?
- Patiënt: hij maakte meestal mijn nek manueel los
- Kine: zorgde dat voor verbetering voor de klachten?
- Patiënt: ja dat deed altijd heel goed, maar ik heb een slechte nek en de klachten blijven terugkomen.
- Kine: Hoe erg is de pijn nu dan, als u het zou moeten scoren van 0, geen pijn of 10 ergst denkbare pijn.
- Patiënt: Uhmm ik denk een 4. Ik voel het vrij constant maar het is leefbaar, het is niet dat ik super veel pijn heb en bepaalde dingen niet meer kan doen.
- Kine: hoe zou u de pijn beschrijven?
- Patiënt: het is een vervelende pijn ter hoogte van mijn schouder-nek.
- Kine: welke bewegingen lokken de pijn uit?
- Patiënt: als ik naar boven kijk en ook draaien naar rechts doet wel pijn. Als ik mijn oor naar mijn schouder breng voel ik het ook trekken.
- Kine: Kan u mij uw dagverloop vertellen van ‘s ochtends tot ‘s avonds.
- Patiënt: mijn dag ziet er altijd verschillend uit eigenlijk, ik werk in shiften. Dus als ik ‘s morgens opsta maak ik me klaar om naar het werk te gaan, daar ben ik wel actief bezig, als ik ‘s avonds terugkom dan ben ik eigenlijk al moe en moet ik nog het huishouden regelen dus heb ik geen tijd om extra aan sport te doen.
- Kine: wat voor werk doet u?
- Patiënt: ik doe sociaal werk.
- Kine: oké, zou ik nog wat testjes mogen doen om een beter beeld te krijgen van uw klacht?
- Patiënt: jaa dat is goed.

Palpatie: Pijn ter hoogte van trapezius, longitudinale nekspieren en levator scapula

Actief onderzoek: Van flexie naar extensie beweegt ze hoogcervicaal eerst, van extensie naar flexie laag cervicaal eerst. Pijn bij rechtsrotatie en links lateroflexie

Passief onderzoek: Pijn bij rechtsrotatie en links lateroflexie + extensie CTO

/p/ 3D extensie onderzoek (Adapted spurling): licht pijnlijk, wat onaangenaam

Stenver’s test CTO: weinig beweging CTO

CASE 4

40 jarige man, zelfstandige in zijn eigen catering bedrijf (voedselpakketten aan huis). Helpt vooral mee met het maken van de lunchboxen, waarbij hij veel voorover gebogen staat. Daarnaast helpt hij ook bij het leveren met de auto. Hij heeft al jaren nekklachten.

onderzoek: vooral last van trapezius en paravertebrale nekspieren bij palpatie.

scenario:

- kine: dag Mark, vertel eens waarom je hier bent.
- patiënt: Ik heb nu al een tijdje last van nekpijn, ik dacht dat dat wel vanzelf zou overgaan maar dat is dus niet het geval.
- kine: hoelang heeft u dan al last hiervan?
- patiënt: toch al een aantal jaar op en af.
- kine: Hoe zou u de klacht beschrijven?
- patiënt: Het is een vervelende pijn in mijn nek, hierzo (duidt plaats aan)
- kine: Welke bewegingen of houdingen doen de pijn toenemen?
- Patient: ik weet niet specifiek welke beweging, het komt op doorheen de dag.
- Kine: Dus als ik het goed begrijp heb je tegen het einde van de dag meer pijn?
- patiënt: ja, ik heb het gevoel dat na een hele dag werken de pijn toeneemt.
- kine: Wat doet u op uw werk?
- patiënt: Ik ben het meeste van de tijd eigenlijk bezig met het maken van lunchboxen. Ik pak al het eten in om daarna in de camion te laden. Daarnaast zit ik ook af en toe in de auto voor het leveren van de boxen.
- kine: ervaart u veel stress op het werk?
- patiënt: dit valt wel mee, ik werk wel zelfstandig maar ik ervaar niet abnormaal veel stress.
- Kine: kan u een voordoen in welke houding u die boxen inpakt?
- Patient: staat voorovergebogen met hoofd in forward head posture.
- kine: Heeft u al andere dergelijke klachten ervaren in uw voorgeschiedenis.
- patiënt: nee, buiten deze nekpijn niets.
- kine: oké, mag ik nu nog enkele testjes doen om uw nek te onderzoeken?

- patiënt: jaa tuurlijk

CASE 5

27 jarige man, HR. Heel veel stress door zijn werk, is altijd bezig. Hij zit vaak in de auto (veel afspraken met kandidaten). Zijn nekklachten zijn al 2 jaar aanwezig, en vooral op het einde van de week het ergste. Zijn pijn is vrij globaal aanwezig, hij kan niet 1 bepaald punt aanduiden.

Onderzoek: niet 1 beweging die extra pijnlijk is, de pijn is constant aanwezig en moeilijk extra uit te lokken. Lateroflexie geeft rekpijn.

Scenario

- kine: dag Peter, vertel eens waarom je hier bent.
- patiënt: Ik heb al lang pijn aan mijn nek, ik dacht nu er toch maar eens naar te laten kijken.
- kine: hoelang heb je al last van nekpijn?
- patiënt: al 2 jaar ongeveer
- kine: Heb je in die 2 jaar al eens hulp gezocht? Of is dit de eerste keer?
- patiënt: ik heb het altijd heel druk met mijn werk, dus ik heb het altijd aan de kant geschoven. Maar nu leek het me toch tijd om er naar te laten kijken, ook door aandringen van mijn vrouw.
- kine: ik kan me voorstellen als u het zo druk heeft op het werk dat dit ook stress met zich meebrengt, of ben ik mis?
- patiënt: nee dit klopt, ik heb een heel veeleisende job waarbij veel stress komt kijken. Daarbij ben ik veel op de baan voor mijn werk, hierbij komt ook stress kijken met het druk verkeer, u kent het wel.
- kine: kan u de pijn wat beter beschrijven?
- patiënt: uhm het is een pijn die eigenlijk constant aanwezig is, ik zou ook niet echt een specifieke plaats kunnen aanduiden waar het pijn doen. Heel mijn nek is pijnlijk eigenlijk.
- kine: welke momenten is de pijn het ergst?
- patiënt: de pijn is feller op het einde van de week.
- kine: welke bewegingen met uw nek lokken de pijn uit?
- patiënt: er is eigenlijk geen specifieke beweging die pijnlijker is, zoals ik al zei is de pijn gewoon constant. Ik probeer mijn nek zo stil mogelijk te houden.

- Kine: zijn er zaken dit uw pijn verbeteren?
- Patiënt: af en toe draag ik een nekkraag en dan voel ik minder pijn.
- kine: heeft u al andere klachten gehad in uw voorgeschiedenis?
- patiënt: nee, heel af en toe heb ik wat kwaaltjes hier en daar. Niks dat niet vanzelf overgaat.
- kine: vindt u het goed als ik enkele testjes bij u doe?
- patiënt: ja, dat is prima

Appendix 3. Graphical representation results

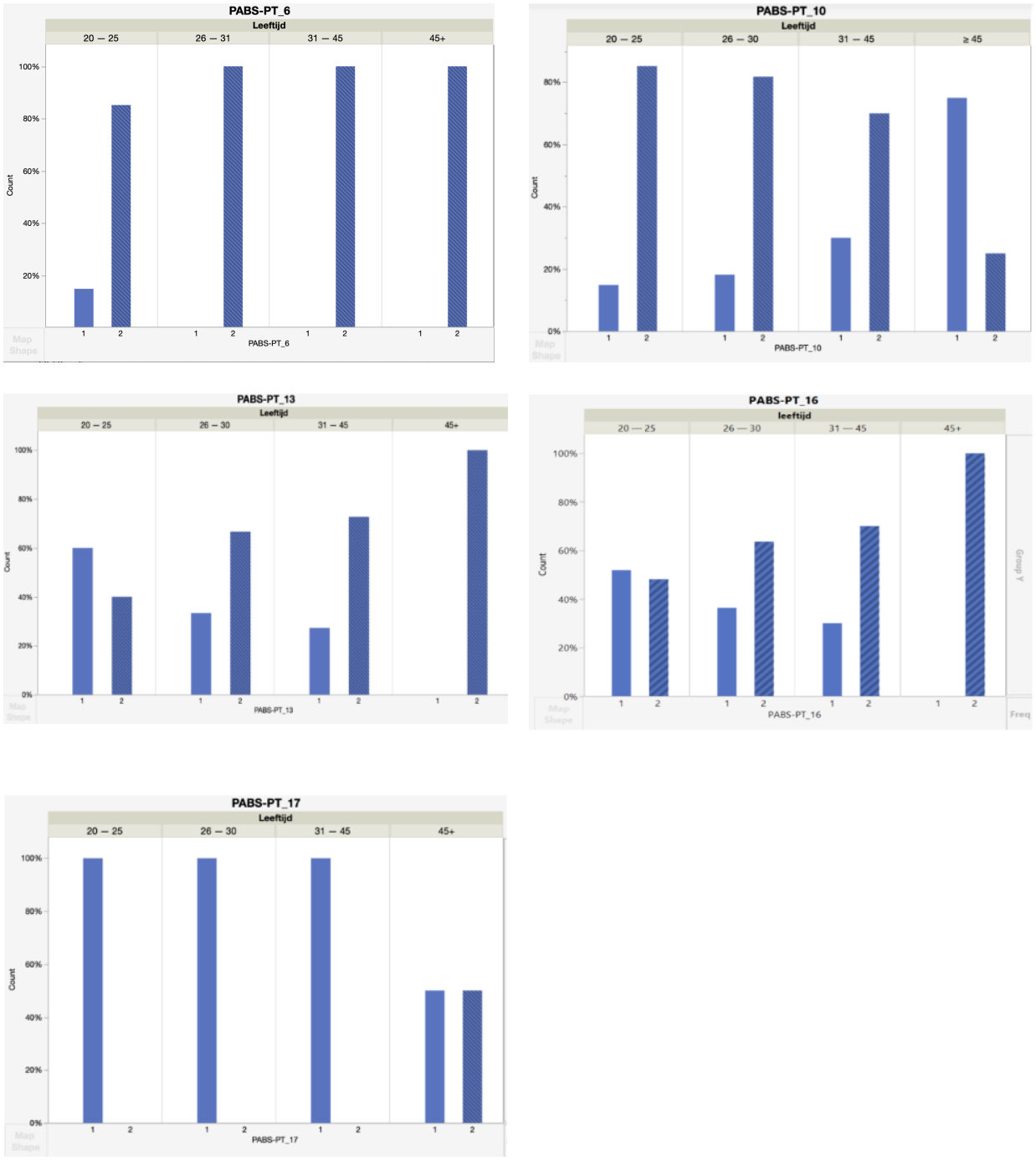
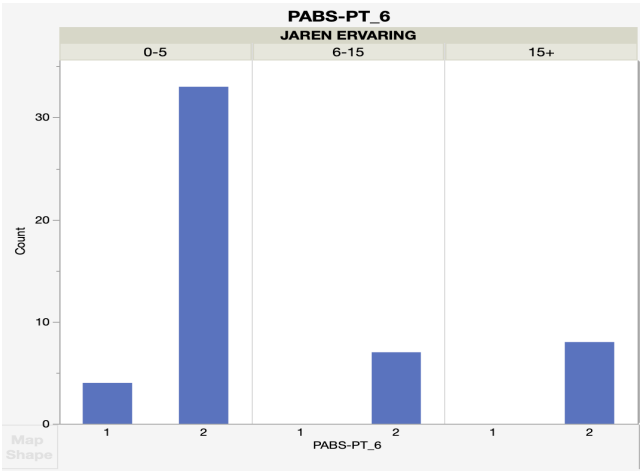
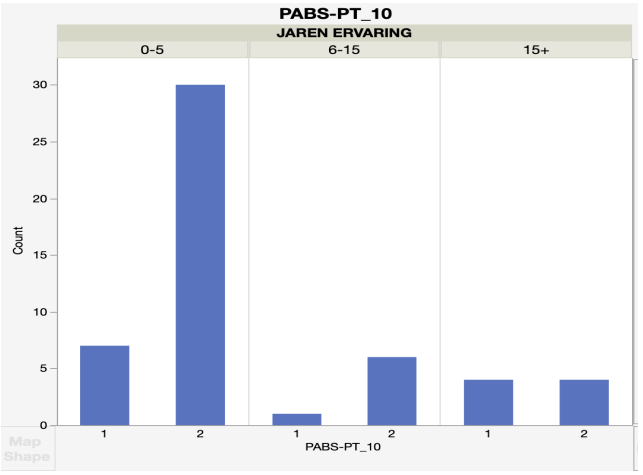
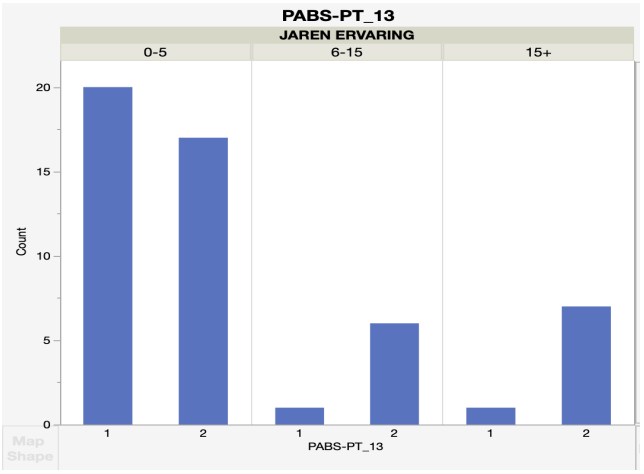
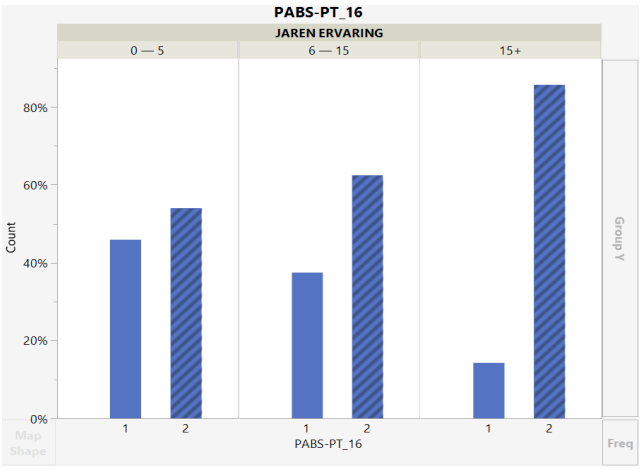


Figure 2. graphics representing the relationship between the age of the physiotherapist and answers on the PABS-pt for questions 6 (a), 10 (b), 13 (c) , 16 (d), 17 (e)









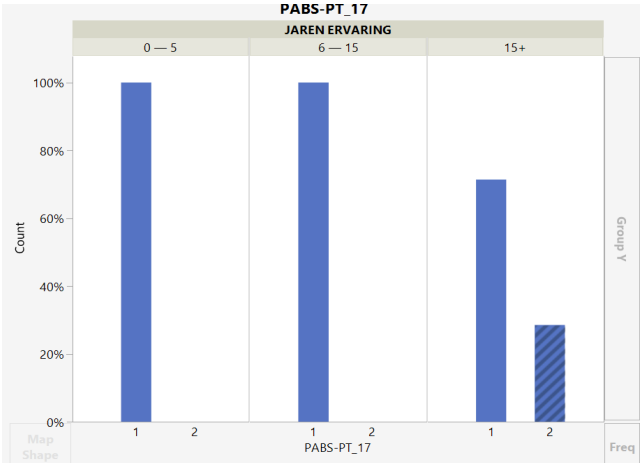


Figure 3. graphics representing the relationship between the years of practice of the physiotherapist and answers on the PABS-pt for questions 6 (f), 10 (g), 13 (h) , 16 (i), 17 (j)

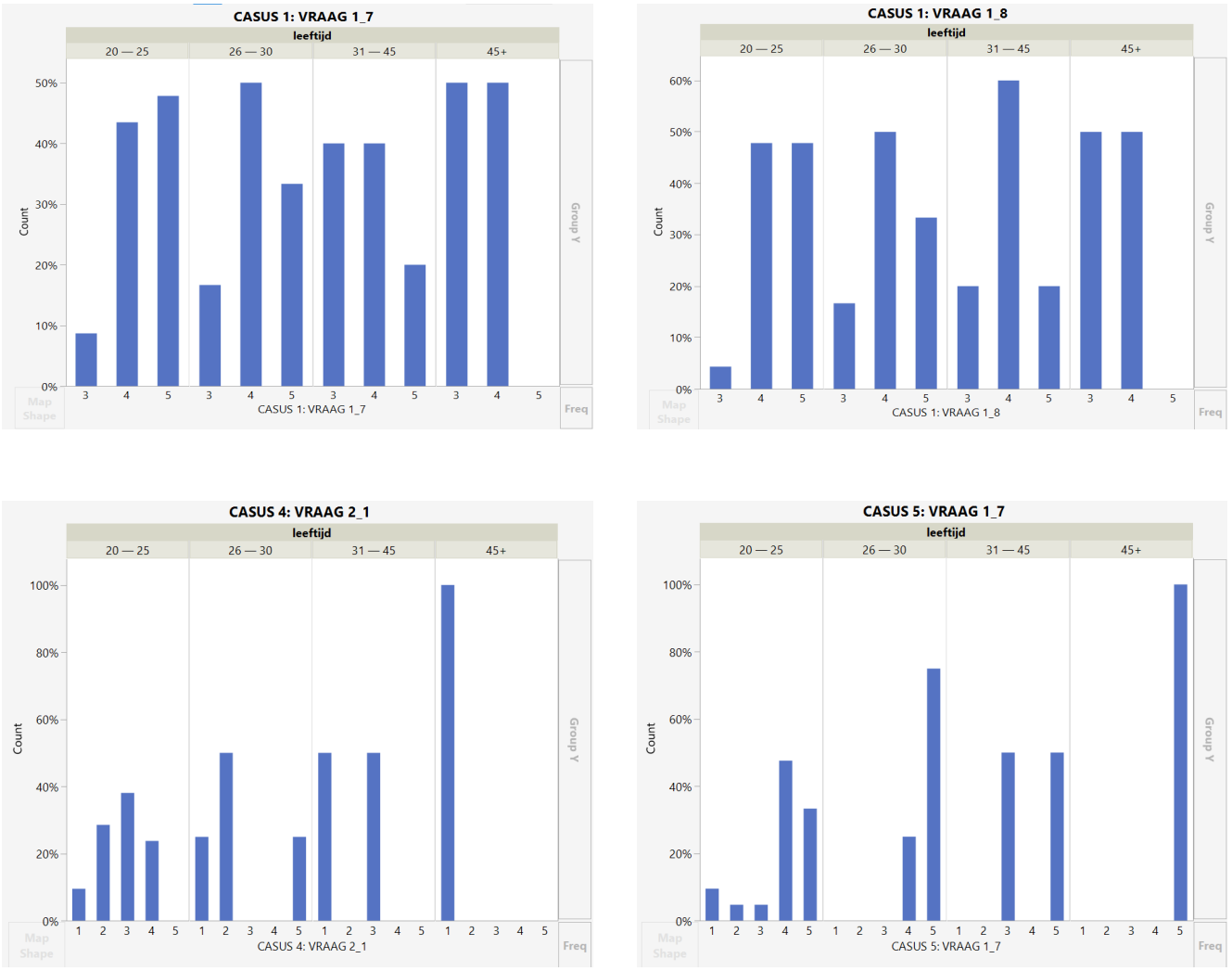


Figure 4. graphics representing the relationship between the age of the physiotherapist and answers on the Casi 1-5 for questions 1_7 casus 1 (k), 1_8 casus 1 (l), 2_1 casus 4 (m), 1_7 casus 5 (n)

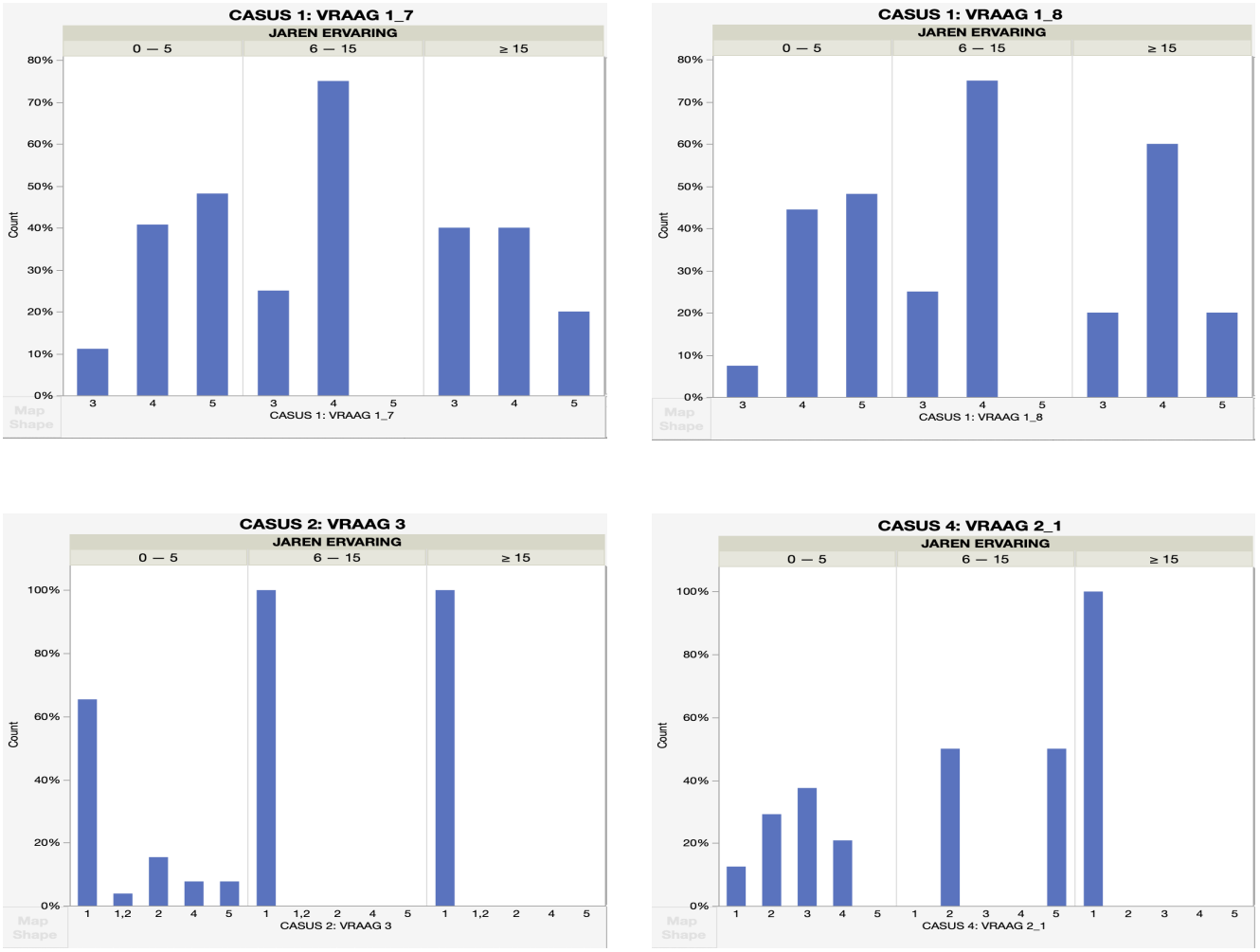
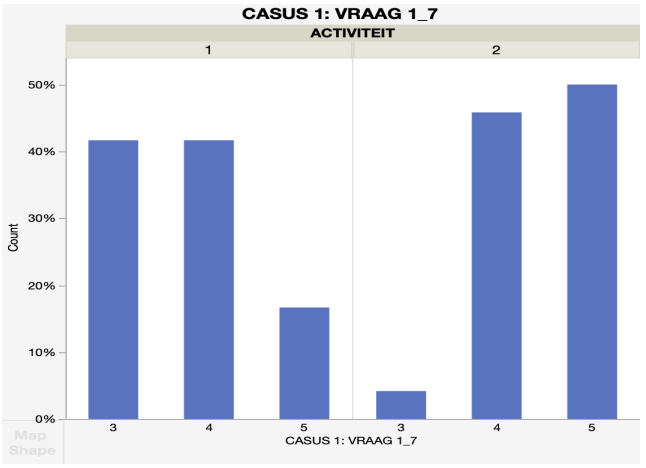
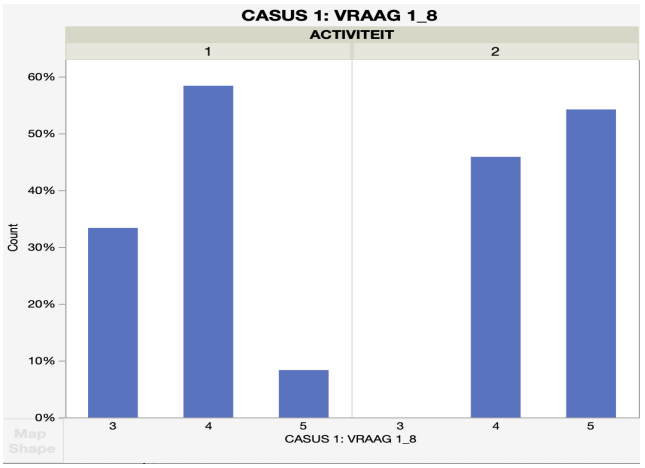
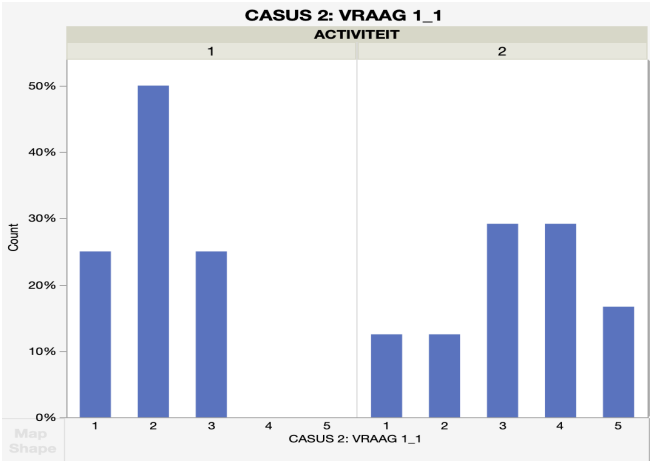
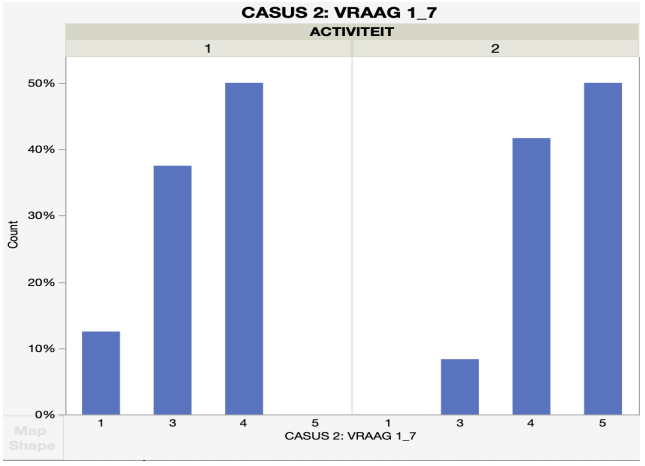


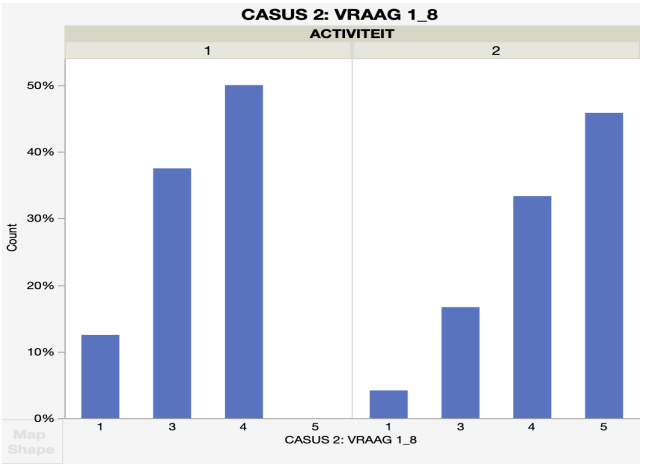
Figure 5. graphics representing the relationship between the years of practice of the physiotherapist and answers on the Casi 1-5 for questions 1_7 casus 1 (o), 1_8 casus 1 (p), 3 casus 2 (q), 2_1 casus 4 (r)











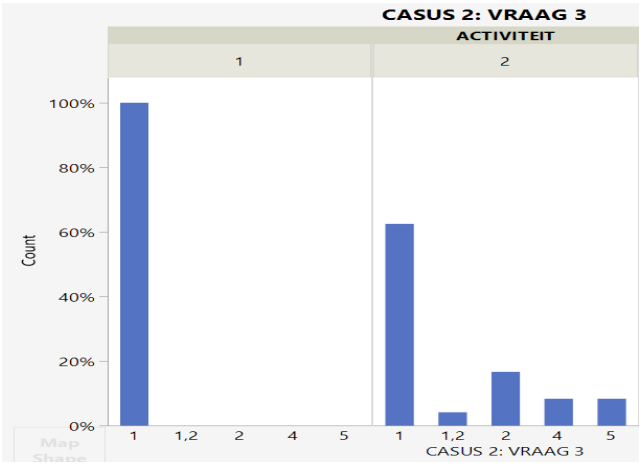


Figure 6. graphics representing the relationship between the activity level of the physiotherapist and answers on casi 1-5 for questions 1_7 casus 1 (s), 1_8 casus 1 (t), 1_1 casus 2 (u), 1_7 casus 2 (v), 1_8 casus 2 (w), 3 casus 2 (x)