Suicide prevention skills of students in mental healthcare: a study on the self-confidence, experience, factual - and perceived knowledge regarding suicide prevention skills of students in the mental healthcare

Linger, Raziya

Universiteit Leiden

Psychologie
Faculteit der Sociale Wetenschappen

Suicide prevention skills of students in mental healthcare

A study on the self-confidence, experience, factual – and perceived knowledge regarding suicide prevention skills of students in the mental health care.

Raziya Linger
S1835904
Joanne Mouthaan
Master thesis Psychology
10 January 2021

Table of Contents

Abstract

Background: Students in mental healthcare do not feel well-educated in talking to and treating suicidal patients. To structurally educate these students it is important to be aware of their knowledge and skills on suicide prevention and to what extent suicide prevention skills are currently implemented in the everyday education.

Aim: Examine how Dutch students in mental healthcare perceive their knowledge, confidence and experience regarding suicide prevention skills and what influencing factors play a role in their experience in these subjects.

Methods: Cross-sectional study that consisted off online self-report questionnaire questioning 440 vocational education, bachelor and (post-) master students in mental healthcare. Descriptive measures, (M)AN(C)OVA's and correlations were performed to determine the statistical significance of group differences in work experience, educational program and educational level as predictors.

Results: Students with suicide prevention training, work experience in mental healthcare, further education or more practical education scored significantly higher on the scales. Significant correlations were found between perceived knowledge, confidence and experience in talking to or treating suicidal patients and between educational level, work experience and the scores on the scales. It was hypothesized that these founding's were due to work experience. However, even when controlled for work experience, the scores on the perceived knowledge, experience and confidence still significantly differ based on educational program.

Discussion: Training in suicide prevention skills should be adapted to the educational program and future responsibilities of students. Structurally educating students in mental healthcare in suicide prevention skills would better prepare them to talk to and treat suicidal patients in the future.

Introduction

According to the World Health Organization, an estimated 804,000 deaths due to suicide occur worldwide every year. For every suicide there are even more people who attempt suicide annually without succeeding. For every 1 suicide, 25 people make a suicide attempt (World Health Organization, 2014). The rate of suicide attempts in the Netherlands has been rising since 1950. According to the Central Bureau of Statistics, around 1811 people in the Netherlands committed suicide just in 2019 alone. More than half of the Dutch population encountered suicidal behavior due to their own thoughts or behavior or of someone else's (113 Zelfmoord preventie , 2019).

In the Netherlands up to 40 percent of people who committed suicide received mental healthcare at the time of their death (Inspectie Gezondheidszorg en Jeugd, 2019). Therefore, mental healthcare professionals are likely to work with people with suicidal behavior.

The practice guideline for the assessment and treatment of patients with suicidal behavior is created by the American Psychiatric Association and the Multidisciplinary guidelines. These are used for diagnoses and treatment of suicidal behavior in the Netherlands. It states that recognizing suicidal behavior and conducting exploratory research are basic skills that all health care professionals should have. According to these guidelines, a healthcare professional should be able to evaluate and communicate with the patient to obtain information through direct questioning and observation about suicidal thinking and behavior (American Psychiatric Association, 2005). Focus of the questioning should be on the nature, frequency, depth, timing and persistence of the suicidal ideation. Healthcare professionals are expected to have suicide prevention skills including making contact with the client, examining the current suicidal state, mapping stress and vulnerability factors, involving loved ones in care, assessing the need of referral and ensuring safety and continuity of care (van Hemert, et al., 2012).

However, studies indicate that suicide prevention training teaching these skills are not always included during education of healthcare professionals and do not have a structural place in initial training of doctors and healthcare professionals worldwide. According to a survey of pre-doctoral psychology interns in the United States, mental healthcare professionals generally receive limited suicide prevention training during their pre-service education. About half of the participants reported having received a didactic training on suicide during their graduate

education (Wakai, et al., 2020). Furthermore, Feldman and Freedenthal (2006) have conducted a study in Great Britain in which they surveyed members of the national association of social workers and found that less than a quarter of them had received training in suicide prevention while in graduate school (Felman & Freedenthal, 2006).

In a study of Sudak et al (2007), residency program directors from primary care specialties pointed out that there is insufficient training in suicide prevention because of underdeveloped educational guidelines for teaching students suicide prevention skills. The researchers concluded that primary care residency trainees, junior general physicians and clinical psychology trainees in other countries also reported receiving little to no training on the assessment and management of suicidal behavior. They expressed the need for more training in evaluating and treating suicidal patients (Sudak, et al., 2007). However as seen in a study done by Silva et al (2016) healthcare professionals with suicide relevant training demonstrate more suicide knowledge and confidence than those without any training. Also, healthcare professionals who reported to have worked with suicidal patients had higher confidence and knowledge scores and presumably received suicide relevant training (Silva , Smith, Dodd, Covington, & Joiner, 2016).

In the Netherlands, The Dutch Suicide prevention expertise center (also known as 113 suicide prevention) is the national organization for suicide prevention. They provide counseling, campaigns to promote communication about suicidal behavior, scientific research into suicide prevention, advice, consultancy and training (113 Zelfmoordpreventie, 2021). Suicide prevention skills in the Netherlands are mostly focused on training healthcare professionals in how to assess and treat suicidal patients. There are two main training courses in the Netherlands: The Gatekeeper training and the PITSTOP training. Gatekeeper is a training designed to increase awareness and to help prevent suicide attempts. This training is mostly given to healthcare professionals and is recommended by the Dutch suicide prevention expertise center. It is based on the method of Question, Persuade and Refer. The three guiding principles of the QPR method and training program are to increase awareness about the problem of suicide, enhance surveillance of others in possible distress, which leads to greater detection of suicide warning signs (Quinnett, 2013). PITSTOP teaches mental health professionals how to deal with suicidal patients according to the most recent scientific insight. The training program has an educational character aimed at increasing knowledge and a skills component using personal feedback, study material and an e-learning module (de Beurs, et al., 2015) . Both of these methods have been proven to positively affect the intervention behavior like connecting with suicidal patients and discussing suicidal behavior, self-efficacy and confidence in participants

(Terpstra, et al., 2018). PITSTOP training has also been shown to be effective in training suicide prevention skills to students as researched by Kullberg et al (2020). This study aimed to determine the effectiveness of an e-learning module on the adherence to the suicide prevention guidelines, knowledge of practical skills and confidence to discuss suicidal behavior in students. Students reported higher levels of self-evaluated knowledge, confidence, and guideline adherence after receiving the e-learning module (Kullberg, et al., 2020).

Given the multidisciplinary guidelines, mental healthcare professionals are expected to be able to act adequately when diagnosing and treating suicidal clients (van Hemert, et al., 2012). Since 2017, there has been a movement of professors, organizations and ministers in the Netherlands who advise that suicide prevention should be an important topic in the education of these future professionals (Kerkhof, 2019), (van Leeuwen, Kerkhof, & Bontius, 2019).

It is unclear to what extent -if at all- suicide prevention skills as taught in the Gatekeeper training and the PITSTOP are currently implemented in the daily education of psychology-, psychiatry- and medical trainees attending Dutch universities. Furthermore, to highlight the structural education of these students and therefor improve the way they are educated in suicide prevention skills it is important to research their current level of knowledge and skills. Hence, this study aims to investigate how Dutch mental healthcare students perceive their knowledge, confidence, and experience in suicide prevention skills. Additionally, this study will determinate which influencing factors play a role their experience in these subjects to possibly improve the way students in mental healthcare are prepared to talk to and treat suicidal patients. The main research question of this study is the following: *What is the perceived and factual knowledge, experience, and confidence level of psychology-, psychiatry- and medical trainees in suicide prevention skills?*

As this is an exploratory study, no firm hypotheses can be made. However, based on the literature 3 hypotheses were formulated: (1) It is expected that students with experience within mental health care may have more self-confidence and knowledge about treating suicidal clients than students who lack work experience (Silva , Smith, Dodd, Covington, & Joiner, 2016). (2) No differences are expected between educational programs. (3) However, a difference in knowledge and self-confidence is expected between bachelor students and students in the master or post-master as they are more likely to have work experience in the mental healthcare (e.g., due to internships) and are therefore more likely to have received suicide prevention training (Silva , Smith, Dodd, Covington, & Joiner, 2016).

Methods

Design and Ethical Approval

This cross-sectional study involved the use of an online survey. The respondents were asked to complete an online self-report questionnaire. This study was approved by the Psychology Research Ethics Committee at Leiden University, The Netherlands (CEP06012021, 27 January 2021). Participants signed a written informed consent form.

Participants

The study used a purposive sample consisting of students in the following study programs; (1) Psychology Bachelor, (2) Psychology Master, (3) post-master specialist training programs for Healthcare Psychology, Psychotherapy or Clinical (Neuro-) Psychology, (4) Medicine bachelor (5) Medicine Master, (6) post-master specialist training program for Psychiatrist, and higher vocational education students in (7) Social work, (8) applied psychology and (9) nursing. The aim was to recruit at least 50 students per subgroup (Students from the Bachelor and Master Psychology, Medicine, post-masters and Vocational education) which led to a sample group of around 250 participants. Inclusion criteria were that the participant was 18 years or older and the participant was enrolled in one of the aforementioned programs during participation in this study. Exclusion criteria were insufficient understanding of the Dutch language as the questionnaire was in Dutch. To try to include as many as possible participants the researchers offered the participants a chance of winning a voucher of 25 euros when finishing the questionnaire. Winners of the vouchers were chosen randomly through a draw. Also, first year psychology and pedagogical sciences bachelor students from the University of Leiden were awarded 1 research participation credit for filling in the questionnaire.

Procedure

Prospective participants were recruited via social media, word of mouth and e-mails written to the study associations to motivate their students to fill in the questionnaire. Especially the Erasmus University Rotterdam, the RINO and the University of Leiden participated actively in recruiting students. The questionnaire was also posted on the research pages of the different schools, like SONA at Leiden University. Distribution started on the 16th of February 2021 and ended on the 5th of July 2021. The students were sent a link to an informed consent form and the information regarding the questionnaire. After giving consent, the students received a link to the questionnaire itself. The questionnaire was in Dutch. Also, prior to starting the questions, the topic of the study and a brief explanation was shown to prepare the students for the line of

questioning. After completing the questionnaire, the students received a thank you e-mail and were given information about contacting 113 suicide prevention if needed, considering the content of the questionnaire.

Instruments

The survey consisted of 52 closed-ended questions grouped into 8 scales: (1) Demographics, (2) Factual Knowledge, (3) Self-evaluation of Knowledge, (4) Provider confidence, (5) Suicide Skills questionnaire, (6) Attitudes Towards suicide, (7) Evaluation of Acting around Suicide and (8) Perceived Task Value. For this study the investigator made use of the demographics, factual knowledge, self-evaluation of knowledge (further mentioned as perceived knowledge), Provider confidence (further mentioned as confidence) and the Qualitative Evaluation of Acting around Suicide (further mentioned as experience).

The perceived knowledge was measured by The Self Evaluation of Knowledge Questionnaire which is a 7-item subscale on the knowledge of suicidal behavior based on the 14-item Question-Persuade-Refer questionnaire (Kullberg, et al., 2020). The students were asked to rate what their perceived knowledge is on certain topics concerning suicidal behavior. They rated this on a 5-point scale from 1 (very little) to 5 (a lot). For example, questions that were asked: *"Rate how much you know about facts concerning suicide prevention skills"* or *"Rate how much you know about to talk with someone about their suicidal thoughts".* The score on the perceived knowledge scale was based on a sum score, meaning that a high score reflects a higher perceived knowledge than a low score. The scores varied between 0 and 35. Cronbach's alpha in this study was .86, reflecting a good internal consistency.

The factual knowledge was measured with a factual multiple-choice questionnaire, created for the purpose of this study based on suicide prevention factsheets published on the website of the The Dutch Suicide prevention expertise center: 113.nl (113 Zelfmoordpreventie, 2020) . The students were asked to answer multiple choice questions on a 10-item scale. The questionnaire contained facts about suicide. Questions that were asked are: *"On average, annually how many people in the Netherlands commit suicide?"* or *"What is the most common psychiatric disorder in people who commit suicide?".* The rating was measured based on a sum score, meaning that the more questions the participants answered correctly, the higher the score reflecting a higher factual knowledge. The range of the scores varied between 0 and 10. Cronbach's alpha was .19 which reflected a weak internal consistency.

The perceived confidence was measured by the Perceived Confidence Scale, which is a three-item scale that measures the confidence of the students in their abilities to ask about, estimate the severity and respond appropriately to suicidal clients (Kullberg, et al., 2020). The level of confidence was calculated by summing the scores of the 3 items. The response options ranged from 1 (strongly disagree) to 5 (strongly agree). The students were asked to answer the following questions: *"I am confident in my ability to successfully treat suicidal patients.", "I am confident in my ability to successfully assess suicidal patients.", "I hesitate in asking patients if they are suicidal."*. Cronbach's alpha was .71, reflecting a good internal consistency. Scores varied from 3 to 15. A higher score reflected more confidence in communicating with suicidal patients.

Personal experience was measured by the "Kwalitatieve Evaluatie van het Handelen rond Suïcide (KEHR)" which translates to the Qualitative Evaluation of Acting around Suicide questionnaire. The KEHR is a 12-item scale that systematically maps out behavior of a care provider after a suicidal incident (de Groot, Kleppe, Pols, de Winter, & Kerkhof, 2018). The KEHR is a 12-item questionnaire in which the students answer with "yes" or "no". Yes, resulted in a score of 1 and no resulted in a score of 0. Examples of questions in the KEHR are: *"Have you ever made contact with someone with suicidal thoughts in your personal life?", "Have you ever asked someone with suicidal thoughts how desperate they feel?"*. Cronbach's alpha was .91 reflecting a good internal consistency. The score was based on a sum score. Scores varied between 0 and 12 with a higher score reflecting more experience in talking to or dealing with suicidal people.

Based on the literature, this study used four possible predictors: (1) Demographic characteristics, (2) Work experience in mental healthcare, (3) Educational level and (4) Educational programs.

Demographic characteristics

The demographic characteristics consisted of the age group (18-20, 21-29, 30-39, 40-49, 50-59 and 60 or older), gender, internship experience in mental healthcare and suicide prevention training experience on a didactic and/or practical level. For this study Internship experience and suicide prevention training on a didactic and/or practical level were used as predictors.

Work experience

The variable work experience was divided into 5 categories varying between 'I have never worked in the mental healthcare to 'I have more than two years of work experience in the mental healthcare'. However, it became apparent that some participants filled in more than one answer making it hard to interpret. To correct for this flaw, the categories were further labeled into three categories: (1) *'less than 1 year of work experience'* consisting participants that filled in that they either have never, or for less than one year worked in mental healthcare, (2) *'1-2 years of work experience'* consisting participants that reported to have worked for more than one but less than 2 years in mental healthcare and (3) *'more than 2 years of work experience'* consisting participants that reported to have worked for more than 2 years in mental healthcare. Also, a dichotomous variable was made dividing the participants into *'with work experience',* consisting the participants with 1 or more years of work experience, and *'without work experience'* consisting the participants with less than a year or no work experience.

Educational level

For the variable educational level, participants were asked what the highest level of education they have completed. Students were able to choose between high school, higher vocational education (HBO), bachelor, master or post-master.

Educational program

For the variable educational program, participants were asked in which study program they are currently in. Participants were able to choose between Nursing, Applied psychology, Social work, bachelor Psychology, bachelor Medicine, master Psychology, master Medicine, Post-master Psychology, Post-master Psychiatry and 'different'. Participants that selected 'different', were able to specify what study program they were in. These participants were later divided into the best fitting program among the previously mentioned study programs.

Statistical analysis

All statistical analyses were conducted using IBM SPSS Statistics, version 24. Descriptive statistics were used to compute frequencies, percentages, means and standard deviations for the demographic characteristics and scores on the questionnaires with p values < .05 indicating statistical significance and correlations above .70 indicating a strong correlation. To be aware of selection bias, chi-square tests were done to investigate if there were any significant differences between the dropouts and the students who completed the questionnaire. The data was obtained from a random sample. Violation of the assumption of homoscedasticity was controlled for by using more conservative tests like the Pillai's trace or unequal variances t-test.

(1) *"Students with experience within mental health care may have more self-confidence and knowledge about treating suicidal clients than students who have no work experience yet".*

MANOVA was performed to test whether there is a significant difference between having work experience in mental healthcare and the score on the experience, self-confidence, factual knowledge and perceived knowledge scale. A Tukey post hoc was used to analyze the significant group differences.

(2) *"No differences are expected between educational programs."*

MANOVA was conducted to compare the scores of the students on the scales and the educational program and academic institution the students were enrolled in. Pillai's trace test was used to research the significant differences between the educational programs and their scores on the scales. The univariate ANOVA results were used to research group differences between the educational programs and academic institutions they were enrolled in and the scores on the perceived knowledge, experience and confidence scale.

(3) "*There is a difference in knowledge and self-confidence is expected between students in the bachelor and students in the master or post-master*

A MANOVA was conducted to compare the differences between educational level and how they scored on factual knowledge, perceived knowledge, confidence and experience. As Box's M test was significant Pillai's trace was used. The Univariate ANOVA test was used to test if there were significant differences.

Results

Participants

The total sample consisted of *N*=466 participants. Twenty-six surveys were excluded from analyses since they did not finish the questionnaire. To check for randomness in their responses a chi-square test was done. There were no significant differences between the answers of the dropouts and the completers on the questions on age, gender or educational level. The final sample consisted of 440 participants.

Table 1 shows the participants that participated in this study. The participants were mostly bachelor Psychology (*n*=261) participants between the ages of 21 and 29 years old (*n*= 203) The ratio of females to males was (5:1), there were also 3 respondents who answered 'different'. There were 274 psychology- (bachelor and (post-)master)-, 50 psychiatry-, 22 medicine- and 14 applied sciences students. Most students were enrolled in the Erasmus university of Rotterdam (*n*= 192) or Leiden University (*n*=139).

Around 15% (*n*=65) of the participants expressed having more than 2 years of experience in the mental healthcare versus 79,3% with no work experience at all (*n*=317). Also, 26,4 % of the students did an internship in the past or were doing one at the time they filled in the questionnaire (*n*=46) while 73,6% of the participants (*n*=324) reported that they have not (yet) done an internship in mental healthcare. Concerning the suicide prevention training, 20,7% (*n*= 91) of the participants had followed a suicide prevention training before versus about 80% (*n*=349) of the participants that did not follow a suicide prevention training. Out of the participants that did, around half, 49,5% (*n*=45), did it as an obligation for work, a third (*n*=26) for personal reasons and around a fifth (*n*=16) as an obligation for their study or internship. About 25% (*n*=112) of the participants has had a didactic lesson on suicide prevention during their education. From these participants 61,6% (*n*=69) thought that the lesson was helpful. There were 34, about 8%, participants who received a skills lesson on suicide prevention during their education. Of these participants, 26 found the skills lesson helpful. Most of the participants, namely 92,5% (*n*= 407) would like to receive a lesson during their educational program, in suicide prevention training.

Table 1

Background characteristics and relevant work experience of the participants

	Final Sample (*N*= 440)		
characteristic	**category**	***n***	**%**
Gender	Male	71	16.1
	Female	366	83.2
	Other	3	.7
Age group	18-20	177	40.2
	21-29	203	46.1
	30-30	44	19
	40-49	8	1.8
	50-59	6	1.4
	60 or older	2	.5
Study program	Nursing	7	1.6
	Applied psychology	4	.9
	Social work	3	.7
	Psychology Bachelor	261	59.3
	Psychology Master	33	7.5
	Psychology Post-master	14	3.2
	Medicine Bachelor	21	4.8
	Medicine Master	1	.2
	Post-master Psychiatry	50	11.4
Academic institution	University of Leiden	139	31.6
	Applied sciences of Leiden	1	.2
	Erasmus University of Rotterdam	192	43.6
	RINO university	46	10.5
	VU Amsterdam	1	.2
	Different	61	13.9
Work experience	No work experience	317	79.3
	Less than one year experience	32	7.3
	One to two years work experience	13	2.9
	More than two years work experience	65	14.8
	Currently working in mental healthcare	86	19.5
Internship	Yes, I have done an internship	79	18
	I'm doing an internship at the moment	37	8.4
	No, I haven't done an internship (yet)	324	73.6
Suicide prevention training	Yes, Gatekeeper via 113	18	4.1
	Yes, PITSTOP	26	5.9
	Yes, but a different one	47	10.7
	No	349	79.3
Reasoning for SPT	Obligation of work	45	49.5
	Obligation of study	16	17.6
	Obligation of internship	4	4.4
	Personal reasons	26	28.6
Received a didactic lesson	Yes	112	25.5
	No	328	74.5
Didactic lesson was sufficient	Yes	69	61.6
	No	43	38.4
Received a skills lesson	Yes	34	7.7
	No	406	92.3
Skills lesson was sufficient	Yes	26	76.5
	No	8	23.5
Would like to receive a lesson in SPT	Fully disagree	1	.2
	Disagree	6	1.4
	Neutral	26	5.9
	Agree	153	34.8
	Fully agree	254	57.7

Note : SPT: Suicide prevention training

Predictor: Suicide prevention training

An independent t-test was conducted to compare the scores of participants without suicide prevention training with participants that did follow a suicide prevention training on the factual knowledge, perceived knowledge, confidence and experience scales. Table 2 shows the mean scores and standard deviations of these groups and their scores on the four scales. The students who did follow a suicide prevention training scored significantly higher on the factual knowledge scale $t(438) = 2.353$, $p = .019$, perceived knowledge $t(171) = 12.884$, $p < .001$, experience scale $t(156) = 7.564$, $p < .001$ and confidence scale $t(161) = 12.475$, $p < .001$.

Table 2

Means and Standard deviations of the scores of students with and without suicide prevention training

M,(SD)	All respondents (N= 440)	Students with suicide prevention training (n = 91)	Students without suicide prevention training (n=349)
Factual knowledge scale*	6.10 (1.59)	6.45(1.48)	6.01(1.61)
Perceived knowledge scale**	18.86 (5.04)	23.54(3.68)	17.63(4.61)
Confidence scale***	9.27 (2.44)	11.48(1.95)	8.69(2.22)
Experience scale****	5.25 (3.71)	8.66(2.79)	4.36(3.39)

*Note: *p=.019 ** p <.001. ***p <.001. ****p <.001*

Predictor: work experience

A MANOVA was performed to test whether there is a significant difference between having work experience in mental healthcare and the score on the experience, self-confidence, factual knowledge and perceived knowledge scale. As the Box's M was significant indicating that there are significant differences between the covariance matrices the Pillai's trace test was used. This analysis showed that students with work experience, score significantly different from students without any work experience $V = 0.411$, $F(12,1100.92) = 19.68$, $p < .001$. As shown by table 3 there was also a statistically significant difference between the amount of work experience in years and how they scored on the scales $V = 0.647$, $F(4,435) = 59.306$, $p < .001$.

Table 3

F-scores, means and standard deviations in work experience

	F	M(SD)	More than 2 years of work experience (n=65)	1-2 years experience (n=13)	Less than 1 year experience (n=32)	No experience\ (n=317)
Factual knowledge scale	4.21*		6.63(1.45)	6.00(1.29)	5.4(1.18)	6.03(1.60)
Perceived knowledge scale	46.66**		24.12(3.36)	21.54(4.43)	19.27(3.46)	17.33(4.56)
Confidence scale	37.24***		11.63(1.79)	10.00(2.09)	9.7(2.09)	8.59(2.22)
Experience scale	65.44****		9.49(1.49)	8.6 (3.17)	5.7(3.41)	3.98(3.24)

*Note: *p<.001, **p<.001, ***p<.001, ****p=.006*

A Tukey post hoc test revealed that the score on the factual knowledge, perceived knowledge, confidence and experience scale was statistically significantly lower for the participants with less than 1 year or no work experience compared to the participants with more than 2 years of work experience on all four of the scales. There was no statistically significant difference between the participants with more than 2 years of work experience and the students with 1-2 years of work experience.

Predictor: Educational programs and academic institution

A MANOVA was conducted to compare the scores of the participants on the scales and the educational program and academic institution the students were enrolled in. As the Box's M was significant indicating that there are significant differences between the covariance matrices the Pillai's trace test was used. Pillai's trace shows that there are significant differences between the educational programs and their scores on the scales V = 0.514, F(44,1712) = 5.737, p < .001. Pillai's trace also showed significant differences between academic institutions V = .87, F(20,1668) = 1.857, p = .012. As shown in table 4, univariate ANOVA results showed significant between-group differences between the educational programs and academic institutions they were enrolled in and the scores on the perceived knowledge, experience and confidence scale. However, due to the differences in group sizes which lead to significant differences between the covariance matrices, a post hoc analysis could not be conducted. Despite that fact, it is seen that Nursing students scored highest on the experience scale (*M =10.000, SD =.817)* and the perceived knowledge scale (*M = 25.429 SD =3.309).* Applied psychology students scored highest on the factual knowledge scale (*M* =6.857, *SD* = 1.464*)* and the confidence scale (*M = 12.556, SD= 1.667).* It is also seen that overall students from the RINO scored highest on the scales.

Predictor: Educational level

A MANOVA was conducted to compare the differences between educational level and how they scored on factual knowledge, perceived knowledge, confidence and experience. As Box's M test was significant Pillai's trace was used. Pillai's trace showed that there were significant differences in how students in different educational levels scored on the scales V = .354, F(16,1740) = 10.558, p <.001. The univariate ANOVA test showed significant differences on the factual knowledge F(4,435) = 3.401, p =.009, perceived knowledge F(4,435) = 29.121, p <.001 , confidence F(4,435) = 26.149, p<.001 and experience scale F(7,435) = 341.759, p <.001.

Table 4 shows the mean scores and standard of the scores on the scales based on educational level. Students that reported master as highest educational level scored highest on perceived knowledge, confidence and experience. The post hoc test revealed that the score on the perceived knowledge scale was statistically significantly higher for these participants compared to the high school ($p < .001$), higher vocational education ($p < .001$), bachelor ($p < .006$) students. There was no statistically significant difference between the master and premaster group ($p = .981$). On the confidence scale, master students also scored significantly higher than high school ($p<.001$), higher vocational education ($p = .003$) and bachelor students ($p <.001$). There was no statistically significant difference between the master and premaster group ($p = .196$). This is also shown on the experience scale on which the master students scored statistically significantly higher than high school, higher vocational education and bachelor students ($p <.001$), but not significantly different from the premaster students ($p = .749$). There were no statistically significant differences on factual knowledge.

Table 4

Means and standard deviations in educational level

M(SD)	High school (n=288)	Higher vocational education (n= 34)	Bachelor (n=43)	Premaster (n=7)	Master (n=68)
Factual knowledge scale	5.97(1.62)	6.41(1.162)	5.88(1.33)	7.23(.95)	6.5(1.55)
Perceived knowledge scale	17.46(4.64)	20.47(4.68)	18.60(4.95)	22.71(3.35)	23.71(3.39)
Confidence scale	8.62(2.26)	9.91(2.64)	9.35(2.22)	9.71(1.60)	11.60(1.69)
Experience scale	4.09(3.29)	5.65(3.83)	5.42(3.65)	8.00(4.16)	9.51(1.39)

Coherence between the work experience x educational program x educational level

Table 5 shows the correlations between scores on the factual knowledge, perceived knowledge, confidence and the experience scale. There is a significant medium correlation found between the confidence scale and the perceived knowledge scale, which suggests that students who score high on the confidence scale are likely to also score high on the perceived knowledge scale. Also, participants with a high score on the confidence scale are likely to report more experience in talking to and treating suicidal patients. However, there were no medium or high significant correlations found with the factual knowledge scale, which suggests that having a high score on perceived knowledge, confidence or experience does not necessary correlate with having more factual knowledge on suicide prevention.

Table 5

Correlations of the outcome measures

r(p)	Factual knowledge scale	Perceived knowledge scale	Confidence scale	Experience scale
Factual knowledge scale	1			
Perceived knowledge scale	.273(<*.001)*	1		
Confidence scale	.148 *(.028)*	.661(<*.001)*	1	
Experience scale	.105 *(.028)*	.545 (<*.001)*	.448 (<*.001)*	1

Table 6 shows that factual knowledge has a low correlation with educational program, level or work experience. Perceived knowledge has a medium correlation with educational level and work experience just like confidence and experience. Presumably educational level and work experience play a role in how high students score their perceived knowledge, confidence and experience in talking to and treating suicidal patients.

Table 6

Correlation: scales versus educational program, educational level and work experience

r(p)	Educational program	Educational Level	Work experience
Factual knowledge scale	003*(.952)*	.132(*.006*)	.115*(.018)*
Perceived knowledge scale	.192*(<.001)*	.436*(<.001)*	.500*(<.001)*
Confidence scale	.210*(<.001)*	.422*(<.001)*	.457*(<.001)*
Experience scale	.21*(<.001)*	.515*(<.001)*	.563*(<.001)*

Since it is likely that participants who have completed several educational programs, have more work experience, a MANCOVA was performed in which work experience was used as a covariate. This showed that the covariate work experience significantly predicts the scores on the perceived knowledge F(1,385) = 11.232, p=.001, confidence scale F(1,385) = 9.805, p = .002 and experience scale F(1.385) = 13.254, p <.001 but not on the factual knowledge scale F(1,385) = .292, p = .732. The MANCOVA showed that, even when corrected for work experience, the scores on perceived knowledge, experience and confidence significantly differ based on educational program but not based on educational level.

Discussion

The aim of this study was to examine how Dutch students in mental healthcare perceive their knowledge, confidence and experience in working with suicidal patients. This study examined if work experience, educational level and educational program were predicting factors of the knowledge, confidence and experience handling suicidal behavior of students in mental health care.

Similar as in the study of Feldman and Freedenthal (2006), less than a quarter of the sample had received a training in suicide prevention during their education; only 20,7 percent of the participants received this kind of training in general and only 17,6 percent received it during their education (Felman & Freedenthal, 2006). Also, similar as the Silva et al. (2016) study, participants that followed accurate suicide prevention training, reported higher scores on perceived knowledge, confidence and experience in talking to and treating suicidal patients than those without any training. Also, participants that reported more work experience had significantly higher scores on the perceived knowledge, confidence and experience which is comparable to the study of Sudak et al (2016). The participants did not significantly differ on the factual knowledge scale. This however was not measured in the previous mentioned studies. It is seen that there were significant group differences in scores on the scales between educational programs. Students in nursing education program, reported the highest experience and perceived knowledge. Applied psychology students reported the highest factual knowledge and confidence. On average students that were enrolled in the RINO, which were only post-master students, scored highest overall indicating that practical students or students that did multiple educational programs feel more experience and knowledgeable. On educational level, it was observed that master students reported the most perceived knowledge, confidence and experience. These scores were significantly higher compared to students that reported high school, higher vocational education or bachelor as their highest educational level. An explanation for this difference is that students in the master already completed a bachelors program making it likely for them to either have completed an internship or have worked in the mental healthcare and therefor have more experience, confidence and knowledge. This theory is supported by the correlations that were found between the scales which showed that perceived knowledge has a medium correlation with work experience, experience in talking and treating suicidal patients and confidence level indicating that work experience is a significant predictor for knowledge, experience and confidence.

Lastly, since it can be assumed that students that have completed more educational programs or students that follow a more practical educational program have more work experience and therefore scored higher on the scales, a MANCOVA was performed to control for work experience. This showed that even when corrected for work experience, the scores on perceived knowledge, experience and confidence significantly differ based on educational program, but not based on educational level. This outcome suggests that even though work experience does explain a big part of the way students perceive their knowledge, experience and confidence it is also seen that educational program is also a predictor for the scores on these subjects.

Strength of this study is that suicide prevention training is a topic that is currently much talked about in the Netherlands given the movement in including suicide prevention skills in the education of mental healthcare professionals which makes this study very applicable and relevant in the current mental healthcare (Jekel, Schoorl, Kullberg, & Mouthaan, 2020). Another strength is that the sample is diverse, consisting of different educational programs and education levels, making it a good representation of the population. Limitations of this study were the underrepresentation of the post-master, medicine and applied sciences students in this sample. In future research this can be prevented by increasing the recruitment time and focusing more on recruiting these students. Also, the study used the factsheet of the website of the Dutch suicide prevention center to test the factual knowledge of the students. Even though these facts are based on scientific data, in testing the factual knowledge scale it was shown that the validity and internal consistency was low. This means that the scale might not fully measure the intended purpose. This could be prevented by using a scale with a higher validity and internal consistency in the future. Lastly, the researcher made use of the predictor 'confidence' which is a subjective feeling of the participant. Although self-confidence may improve with training, it is likely that there are care providers who remain uncertain about talking to and treating suicidal patients. This concept may need to be further explored in future research.

Recapitulatory, it is seen that only a quarter of the students received a form of suicide prevention training even though most students expressed interest in receiving such a training. Also, even when corrected for work experience, students still experience significantly different levels of experience, confidence and perceived knowledge in talking to and treating suicidal patients based on their educational program.

Therefore, implications of this study are found within the bigger picture. It is known that the way students perceive their knowledge, confidence and experience is partly based on their work experience and educational program it is important that educating these students is adapted to their educational program as well as informing them which responsibilities could come with

their future positions regarding suicide prevention. Additionally, it is of great importance that these types of lessons become more common in educating mental healthcare students since only a third of these students have received a didactic or skills lesson during their study. This by creating more awareness on this topic and therefor possibly improve the current curriculum in the future, to better fit the needs of the student.

For further research it is important to find or create a factual knowledge questionnaire to further test what kind of factual knowledge on suicide prevention current students possess. Also, to be able to draw better conclusions further research should aim for more representative groups of the educational programs and what is expected from them in the work field concerning suicide prevention. Lastly, this study only focused on higher education within the Netherlands. However, not only students from higher education treat or talk to suicidal clients. Therefore, advice for future research is to investigate how students in post-secondary vocational education (MBO) experience talking to and treating of suicidal clients.

Although a lot of work is yet to be done, the findings provide support for the movement to better educate students that are going to be working in the mental healthcare. This research highlights the importance of structurally educating these students as best as possible to improve the way students in mental healthcare are prepared to talk to and treat suicidal patients.

.

References

113 Zelfmoord preventie. (2019a). *Over suicide preventie*. Retrieved 28 October 2021, from https://www.113.nl/cijfers-zelfdoding-nederland-2019

113 Zelfmoord preventie. (2019b). *Suicide facts and figures*. Retrieved 28 October 2021, from https://www.113.nl/sites/default/files/113/2020%20middelen/Factsheet-suicide%20facts%20and%20figures.pdf

113 Zelfmoord preventie. (2020a). *Onderzoek*. Retrieved 28 October 2021, from https://www.113.nl/professionals-en-organisaties/onderzoek

113 Zelfmoord preventie. (2020b). *Trainingen en voorlichtingen | 113 zelfmoordpreventie*. Retrieved 28 October 2021, from https://www.113.nl/academy

113 Zelfmoord preventie. (2021) *113: Een land waar niemand eenzaam en radeloos sterft door zelfmoord.* Retrieved 2 January 2022, from https://www.113.nl/sites/default/files/113/Algemeen/113-Factsheet-2021.pdf

American Psychiatric Association. (2005). *Practice guidelines for the Assessment and Treatment of Patients With Suicidal Behaviors*. https://psychiatryonline.org/pb/assets/raw/sitewide/practice_guidelines/guidelines/suicide.pdf

Boris, N. W., & Fritz, G. K. (1998). Pediatric Residents' Experiences With Suicidal Patients. *Academic Psychiatry*, *22*(1), 21–28. https://doi.org/10.1007/bf03341440

Chuop, M., Michel, Z., Shah, R., Chen, J. I., & Black, W. (2020). From Screening to Interventions: Teaching Clinical Suicide Prevention Skills to Medical Students. *Academic Psychiatry*, *45*(3), 292–296. https://doi.org/10.1007/s40596-020-01248-3

D'Anci, K. E., Uhl, S., Giradi, G., & Martin, C. (2019). Treatments for the Prevention and Management of Suicide. *Annals of Internal Medicine*, *171*(5), 334. https://doi.org/10.7326/m19-0869

de Beurs, D. P., de Groot, M. H., de Keijser, J., Mokkenstorm, J., van Duijn, E., de Winter, R. F., & Kerkhof, A. J. (2015). The effect of an e-learning supported Train-the-Trainer programme on implementation of suicide guidelines in mental health care. *Journal of Affective Disorders*, *175*, 446–453. https://doi.org/10.1016/j.jad.2015.01.046

de Groot, M. H., Kleppe, R. T., Pols, E., de Winter, R. F., & Kerkhof, A. J. (2018). Datagestuurd leren van suïcidale incidenten met KEHR SUICIDE: GGz Eindhoven als praktijkvoorbeeld. *Tijdschrift Voor de Psychiatrie*, *60(2018)*(9), 581–591. http://www.tijdschriftvoorpsychiatrie.nl/assets/articles/60-2018-9-artikel-degroot.pdf

Feldman, B. N., & Freedenthal, S. (2006). Social Work Education in Suicide Intervention and Prevention: An Unmet Need? *Suicide and Life-Threatening Behavior*, *36*(4), 467–480. https://doi.org/10.1521/suli.2006.36.4.467

Godoy Garraza, L., Kuiper, N., Cross, W. F., Hicks, B., & Walrath, C. (2021). The Effectiveness of Active Learning Strategies in Gatekeeper Training on Behavioral Outcomes. *Crisis*, *42*(5), 360–368. https://doi.org/10.1027/0227-5910/a000733

Holmes, G., Clacy, A., Hermens, D. F., & Lagopoulos, J. (2019). The Long-Term Efficacy of Suicide Prevention Gatekeeper Training: A Systematic Review. *Archives of Suicide Research*, *25*(2), 177–207. https://doi.org/10.1080/13811118.2019.1690608

Isaac, M., Elias, B., Katz, L. Y., Belik, S. L., Deane, F. P., Enns, M. W., & Sareen, J. (2009). Gatekeeper Training as a Preventative Intervention for Suicide: A Systematic Review. *The Canadian Journal of Psychiatry*, *54*(4), 260–268. https://doi.org/10.1177/070674370905400407

Kerkhof, I. B. E. A. (2019, August 13). Zorgverleners moeten tijdens hun opleiding al leren over suïcidepreventie. *Trouw*. https://www.trouw.nl/opinie/zorgverleners-moeten-tijdens-hun-opleiding-al-leren-over-suicidepreventie~b12beecd/?referrer=https%3A%2F%2Fwww.google.com%2F

Khaddari, R. (2018, December 11). ‘Studenten moeten les krijgen in suïcidepreventie’. *Het Parool*. https://www.parool.nl/nieuws/studenten-moeten-les-krijgen-in-suicidepreventie~b88f8177/?referrer=https%3A%2F%2Fwww.google.com%2F

Kullberg, M. L. J., Mouthaan, J., Schoorl, M., de Beurs, D., Kenter, R. M. F., & Kerkhof, A. J. (2020). E-Learning to Improve Suicide Prevention Practice Skills Among Undergraduate Psychology Students: Randomized Controlled Trial. *JMIR Mental Health*, *7*(1), e14623. https://doi.org/10.2196/14623

Ministerie van Volksgezondheid, Welzijn en Sport. (2021, July 22). *Suïcides en suïcidepogingen binnen de ggz*. Geestelijke gezondheidszorg | Inspectie Gezondheidszorg en Jeugd. Retrieved 13 November 2021, from https://www.igj.nl/zorgsectoren/geestelijke-gezondheidszorg/suicidemeldingen-en-suicidepreventie

Silva, C., Smith, A. R., Dodd, D. R., Covington, D. W., & Joiner, T. E. (2016). Suicide-Related Knowledge and Confidence Among Behavioral Health Care Staff in Seven States. *Psychiatric Services*, *67*(11), 1240–1245. https://doi.org/10.1176/appi.ps.201500271

Stecz, P., Gmitrowicz, A., & Nowakowska-Domagała, K. (2019). Psychometric Properties of the Suicide Acceptance Questionnaire. *Community Mental Health Journal*, *56*(3), 506–512. https://doi.org/10.1007/s10597-019-00507-4

Sudak, D., Roy, A., Sudak, H., Lipschitz, A., Maltsberger, J., & Hendin, H. (2007). Deficiencies in Suicide Training in Primary Care Specialties: A Survey of Training Directors. *Academic Psychiatry*, *31*(5), 345–349. https://doi.org/10.1176/appi.ap.31.5.345

Terpstra, S., Beekman, A., Abbing, J., Jaken, S., Steendam, M., & Gilissen, R. (2018). Suicide prevention gatekeeper training in the Netherlands improves gatekeepers' knowledge of suicide prevention and their confidence to discuss suicidality, an observational study. *BMC Public Health*, *18*(1). https://doi.org/10.1186/s12889-018-5512-8

Trimbos-instituut. (2012). *Multidisciplinaire richtlijn diagnostiek en behandeling van suïcidaal gedrag* (978 90 5898 224 7). De Tijdstroom uitgeverij BV. https://assets-sites.trimbos.nl/docs/763ed30c-00e4-45d4-9e6b-bdc925c01921.pdf

van Leeuwen, M., Kerkhof, A., & Bontius, I. (2019, oktober 8). *Suïcides voorkomen met opleiding van artsen en hulpverleners.* Retreived from www.petities.nl: https://petities.nl/petitions/suicides-voorkomen-met-opleiding-van-artsen-en-hulpverleners

Wakai, S., Schilling, E. A., Aseltine, R. H., Blair, E. W., Bourbeau, J., Duarte, A., Durst, L. S., Graham, P., Hubbard, N., Hughey, K., Weidner, D., & Welsh, A. (2020). Suicide prevention skills, confidence and training: Results from the Zero Suicide Workforce Survey of behavioral health care professionals. *SAGE Open Medicine*, *8*, 205031212093315. https://doi.org/10.1177/2050312120933152

Wilcox, H. C., & Wyman, P. A. (2016). Suicide Prevention Strategies for Improving Population Health. *Child and Adolescent Psychiatric Clinics of North America*, *25*(2), 219–233. https://doi.org/10.1016/j.chc.2015.12.003

Wong, J. C. M. (2018). Predicting Suicide and its Prevention. *Department of Psychological Medicine, National University Health System, Singapore*, *2018(47)*(9), 357–359. https://annals.edu.sg/pdf/47VolNo9Sep2018/V47N9p357.pdf

World Health Organization. (2014). *Precenting Suicide: a global imperative* (ISBN 978 92 4 156477 9). WHO Press. https://apps.who.int/iris/bitstream/handle/10665/131056/9789241564779_eng.pdf