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## Psychological Distress among Young Norwegian Health Professionals

**Abstract:** High psychological distress has been shown to be a risk for acquisition of skills that are necessary when working in the health professions. In this study, we present longitudinal data on psychological distress among 169 young Norwegian health professionals. We measured distress at the end of their studies, and three years later on, when being professional nurses, physiotherapists and occupational therapists. Psychological distress was assessed by applying the 12-item version of the General Health Questionnaire (GHQ 12). 27% of the nursing students scored higher than the GHQ 12 case score at the end of the study, but as nurses, they became significantly less distressed three years later (13%). The other two professions showed relatively small and non-significant reductions in psychological distress during the first three years as a professional. Hierarchical multiple analyses showed that the level of psychological distress when finishing the study, the young professionals' experience of personal support from colleagues, the experience of work-home conflicts and the experience of methodological coping at work were significant predictors of psychological distress three years after working as young health professionals. These four predictors explained together 28% in the variance in GHQ 12 three years after graduation. Belonging to any of the three professions did not contribute to the explained variance in psychological distress three years after graduation.

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Students and professionals in health education are highly focused in the research on psychological distress. High psychological distress is associated with the feeling of anxiety and depression, low self-esteem, low ability to concentrate, cope with difficulties, participate in social life and make decisions (Goldberg & Williams, 1991). Apart from the personal burden high psychological stress may represent for the young professional, it may also contribute to impaired academic performance, attrition, and cynicism and lack of empathy when working with patients (Dyrbye, Thomas, & Shanafelt, 2005; Nerdrum, Rustoen, & Ronnestad, 2009). On a neuro-psychiatric level, sustained high psychological distress may block the ability to cope and thereby inhibit important processes like paying attention and learning (Ursin & Eriksen, 2004, 2010). It has for long been known that increased psychological distress is also associated with increased risk for sick leave (Nystuen, Hagen, & Herrin, 2001). In a recent study, persons working in the health

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professions (the so-called “life professions”) have been found to be more likely to be at risk of disability pension in Norway (Tufte, 2013).

While 15%–20% of the general population in western societies experience levels of psychological distress corresponding to clinical significant burdens (caseness) (Knudsen, Harvey, Mykletun, & Overland, 2012; Kringlen, Torgersen, & Cramer, 2001), students in the health educations report clearly higher burdens of psychological distress (25%–50%) (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001; Chang, Hancock, Johnson, Daly, & Jackson, 2005; Dahlin, Joneborg, & Runeson, 2005; Dyrbye et al., 2005; Gorter et al., 2008; Henning, Ey, & Shaw, 1998; Lo, 2002; Monk, 2004; Nerdrum et al., 2009). Little is known however, about levels and predictors of psychological distress in the transition from being a student moving into the workforce as a professional. In this study, we investigate possible changes in psychological distress and some selected predictors for psychological distress among young professionals from the end of three particular health education programmes and until three years into their career as professional nurses, physiotherapists and occupational therapists.

Crossing the border between education and work has been conceptualized from educational and learning perspectives. Heggen (2008) points to the different contexts for learning and coping in college compared to the context for learning and coping in a workplace setting. This may create a gap between the theoretical knowledge that the candidates have learned in college and the more practical knowledge the workplace is expecting from the young professional nurses, physiotherapists and occupational therapists. This gap between two arenas of knowledge is described by many as a “practice shock” illustrated as a transition from study to work, which may be difficult and includes a personal strain (Halfer & Graf, 2006; Smeby & Heggen, 2012). It has also been called a “transfer shock” (Cejda, 1997), thus connoting a strong feeling of professional uncertainty and lack of coping among the young professionals when meeting the “reality” of work as health care professionals. Health care students are trained in practical working situations when in college. It is after graduation, however, that the young professionals meet their responsibilities as professionals at work. If a practice shock exists among young health professionals, it is our assumption that their psychological distress will be influenced negatively. Linking a practice shock to a possible increase in psychological distress, has to the best of our knowledge, not been done with empirical data before. However, former studies among American nurses have shown that it may take up to 18 month to feel comfortable and confident in the nursing role (Halfer & Graf, 2006). Measurements of psychological health were not a part of these studies.

Based partly on theory and empirical findings, as well as on staff/faculty observations, the main sources for heightened and decreased psychological distress have been related to the following factors:

- (1) personal relationships (married/cohabiting vs being single) (Jones & Johnston, 2000; Orlinsky, Rønnestad, & Ambühl, 2005);
- (2) the work–home conflict (Allen, Herst, Bruck, & Sutton, 2000; Casper, Eby, Bordeaux, Lockwood, & Lambert, 2007);

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- (3) characteristics of the psychosocial milieu at the workplace (Dalgard, Mykletun, Rognerud, Johansen, & Zahl, 2007; Bratt, Broome, Kelber, & Lostocco, 2000; Hausser, Mojzisch, Niesel, & Schulz-Hardt, 2010);
- (4) conflicts between meeting the ward- and patient reality and young professional helpers' experience of methodological coping in practical clinical work; *the practice shock* (Dyess & Sherman, 2009; Halfer & Graf, 2006; Lindop, 1999; Orlinsky et al., 2005; Stordeur, D'Hoore, & Vandenberghe, 2001);
- (5) heavy burdens from working with demanding interpersonal situations and patients with serious illnesses (D. L. Beck, Hackett, Srivastava, McKim, & Rockwell, 1997; Bratt et al., 2000; Fox, Diamond, Walsh, Knopf, & Hodgins, 1963; Lo, 2002; Parkes, 1985).

Being part of a large-scale research project on professional educational programs, also including programs in teaching, social work and child welfare, we were not free to choose variables in our study. We had empirical data on the following independent variables: 1 (personal relationships; married/cohabiting/single), 2 (the work-home conflict), 3 (characteristics of the psychosocial milieu at the workplace) and 4 (the experience of methodological coping in practical clinical work). We considered that variable 5 (strong burdening from interpersonal situations and serious patient illness) might be more nursing specific since nurses have responsibility for the total care of the patients more often than do physiotherapists and occupational therapists. However, we did not have empirical data on this possible variable.

By comparing changes in psychological distress in the three caring professions having a common focus on health promotion, patient suffering and patient dysfunction, we may also explore if being a nurse entails specific stressors compared to being a physiotherapist and an occupational therapist or if the chosen stressors influence these three groups in more or less the same way.

We wanted to investigate the potential impact of one more independent variable. This concerns the level of student psychological distress at the end of the study. Even if psychological distress is a state variable changing with context and circumstances in life, levels of psychological distress also have a component of invariability (Goldberg et al., 1997; Goldberg, Oldehinkel, & Ormel, 1998; Nerdrum et al., 2009). Psychological distress among young professional nurses, physiotherapists and occupational therapists three years after graduation is the dependent variable in the study.

## **Aim of the Study**

Based on previous research and theories about levels and sources of psychological distress among health professionals, we conducted a study comparing psychological distress among nurses, physiotherapists, and occupational therapists. The aim of our study is twofold:

- (1) To conduct a longitudinal investigation of change and stability in levels of psychological distress in nurses, physiotherapists and occupational therapists from the end of their studies, and three years later on, in their role as health professionals.
- (2) To assess how being married/cohabiting versus being single, the degree of work-home conflict, characteristics of the psychosocial milieu at the workplace and the experience of methodological coping at work predicted psychological distress in young professionals three years after finishing their studies.

## **Method**

In September 2000, all entry-level students at Oslo University College were asked to participate in a longitudinal study (StudData) of student and post-graduate functioning. StudData is a research programme with the purpose of stimulating comparative research on vocational educational programs. The students were informed that they would be contacted in order to fill out questionnaires, at the beginning (t1), at the end of their studies (t2) and three and six years into their career as young professionals (t3, t4). The students and, later on, the young professionals who filled out questionnaires at both t2 and t3 (completer sample) are the participants in this study. They were informed that participation in the study was voluntary and that they could refuse to participate or withdraw from the study at any time. Permission to collect, compute, and store the data was approved by The Norwegian Data Inspectorate.

## ***Participants***

348 students from the three educational programs participated in the collection of data at t2; 197 nursing students, 101 physiotherapy students and 50 occupational therapy students. 169 students/young professionals participated (84, 56 and 29, respectively) at t2 and t3. The female students of the completer sample constituted 98%, 90% and 90%, and the mean ages were 26.4, 25.1 and 28.2 years. Attrition from t2 to t3 was 57% among nursing students, 45% among physiotherapy students and 42% among occupational therapy students. Attrition from t1 to t2 was 47%, 39% and 42%, respectively. In principle, all students who participated at t1 were invited to participate at t2 and t3. Among the 169 participants in the completer sample, 119 had participated at t1.

## ***The Bachelor Programs***

All participants in this study are bachelor students in nursing-, physiotherapy- or occupational therapy programs at Oslo University College. These bachelor programmes are all full time studies giving 180 ECTS credits. 42% of the nursing programme is mandatory clinical placements in hospitals and in community health settings. 25% of the programme for the physiotherapists and the occupational therapists is mandatory clinical placements in hospitals, in community health settings, and in simulation laboratories for practical training at the university college.

## ***Instruments***

### *The General Health Questionnaire 12 (GHQ)*

GHQ is a widely used self-report instrument for measuring psychological distress and for screening non-psychotic mental disorders (Goldberg et al., 1997). It was originally designed to be a culture specific instrument for detecting psychiatric illness in Londoners, but several studies have demonstrated that the instrument also has high cross-cultural validity (Goldberg et al., 1998). GHQ has been validated in a large number of studies of the general adult population, clinical populations and in populations of students (Adlaf et al., 2001; Firth, 1986; Gorter et al., 2008). GHQ has been translated to and validated in more than 40 languages, and exists in five versions that vary on the number of items (12, 20, 28, 30, 60). The twelve item version was chosen in the present study due to its sensitivity in discriminating between psychiatrically healthy and ill subjects (Goldberg & Williams, 1991). In this study it was applied for measuring psychological distress in students at the end of their studies and three years into their career as young professionals.

Six items of the GHQ 12 are framed positively (e. g. “able to enjoy day-to-day activities”) and have the four response categories “better than usual,” “same as usual,” “worse than usual” and “much worse than usual”. Six items are framed negatively (e. g. “felt constantly under strain”) and have the four response categories “less than usual”, “as usual”, “more than usual” or “much more than usual.” The person is asked to mark the degree he or she has experienced the described item during the last two weeks. The GHQ is constructed as a state-measure that is sensitive to changes in psychological distress, but also to changes in positive psychological health (Goldberg & Williams, 1991). Two different scoring systems are used. The first is based upon a one-dimensional model that assumes that all psychiatric disorders share a common factor. Degree of severity, then, can be placed on one axis. This one-dimensional model is reflected in the application of a Likert system (0, 1, 2, 3). The scoring range is 0-36 (low to high distress). The other scoring system (GHQ case score) is based upon a clinical theory that assumes that one can identify a clinically meaningful threshold in the dimension of distress measured by the GHQ. This threshold constitutes the cut-off point where a clinically significant disorder (case) is reflected in the person’s score. When using GHQ as a screening instrument, a categorical scoring (0, 0, 1, 1) is employed with a scoring range of 0-12. In this paper, we applied both scoring systems. The GHQ 12 had high internal consistency indicating good reliability for Likert scores and GHQ case scores (Cronbach’s alpha = .85). The formal

definition of the threshold for psychiatric case identification with the GHQ is the number of GHQ symptoms where the probability for being assessed to be a case exceeds 50% in an independent psychiatric assessment. Assessed from many validation studies that use clinical interviews as the gold standard, GHQ 12 (case score) has a satisfactory ability both to detect cases (median sensitivity = 87%) and non-cases (median specificity = 82%). Like most GHQ 12 studies assessing mental health problems, we have applied the four+ threshold. Individuals marking four or more of the 12 items on the response categories “more than usual”/ “worse than usual” or “much more than usual”/ “much worse than usual” in the last two weeks will be classified as having a clinically significant problem and thereby belong to the case group (for an overview see Goldberg et al., 1998).

*The General Nordic Questionnaire for Psychological and Social factors at Work (QPSNordic)*

QPSNordic was applied for measuring the work-home conflict (Wannström, Peterson, Asberg, Nygren, & Gustavsson, 2009). Work-home interaction was measured at t3 by using the following two items from the QPSNordic: “Does it happen that demands on the job disturb your home life and family life?” and “Does it happen that demands from the family or spouse/cohabitant/partner disturb the performance of your work?” (response format 1-7). These two items correlated relatively low ( $r = .36$ ,  $p < .001$ ). We used the Spearman Brown correction and estimated this reliability coefficient to be .56, thus indicating a questionable reliability for this measure in our dataset. However, research on the QPSNordic has generally reported good reliability coefficients (Wannström et al., 2009).

*The Job Demand-Control-Support-Model (JDCS)*

Karasek’s JDC model has been theoretically and empirically important for identifying factors contributing to healthy and unhealthy work places (Karasek & Theorell, 1990). Experiencing work with a high demand factor combined with a low control factor has been shown in many studies to be associated with high psychological distress (Hausser et al., 2010; Stansfeld & Candy, 2006). The original model has been expanded to include a support factor (JDCS) (Johnson & Hall 1988) predicting that jobs with a high support factor (e.g. “People I work with take a personal interest in me” (co-worker support) and “My supervisor is concerned about my welfare” (supervisor support) contributes to decreased psychological distress). Bivariate correlations confirmed that the measurements of job demand-control and supervisor support were not significantly associated with the dependent variable, and therefore not entered in the model tested with hierarchic multiple regression analysis (Tabachnick & Fidell, 2012). We applied the co-worker subscores (two items, each with four response categories) at t3 to measure supportive psychosocial work conditions at the young professionals’ work places. The two items measuring Co-Worker support correlated (Pearson’s  $r$ )  $r = .62$ . We used the Spearman Brown correction and estimated the reliability coefficients of .77, thus indicating good reliability in the measurement of Co-Worker support.

*The StudData Questionnaires*

The demographic data of the educational assignment, gender and age were asked for in the questionnaire used at graduation (t2). The questions for measuring the independent variables of personal relationships and experience of methodological coping in the job were measured at t3. The following items from the StudData questionnaire were applied: “For the time being, do you live together with a spouse/ a cohabitant/ a partner?” and “How well do you master the methods you apply in your work?” (response format 1-5). Bivariate correlations confirmed that being married/cohabiting/single, was not significantly associated with the dependent variable, and therefore not entered in the model tested with hierarchic multiple regression analysis.

*Statistical Analyses**Comparing groups*

GHQ 12 case rates for psychological distress and GHQ 12 Likert scores for psychological distress were compared by using McNemar test for related samples, Kruskal Wallis test and paired samples t-tests. The case rates and the Likert scores in the completer sample were compared with the attrition sample by using Chi square tests and t-tests for independent samples. To assess the degree of comparability between the completer samples and the attrition samples, we applied logistic regressions to assess if gender, married/cohabitation/single, age and psychological distress at t2 predicted attrition or participation at t3 (Twisk, 2007). We applied a Univariate General Linear Model to compare the three groups on the four independent variables assumed to influence the psychological distress at t3. In addition to using empirical findings and theory about psychological distress, we used bivariate analyses (Pearson’s r) to check if the assumed independent variables in the dataset were significantly associated ( $p < .01$ ) (Tabachnick & Fidell, 2012) with psychological distress at t3. This was done in order to create a model for explaining the psychological distress the young professionals reported three years after graduation.

*Hierarchical multiple regression*

Using a hierarchical multiple regression analysis we computed unstandardized coefficients and beta weights at each step in the final analysis of the model. We assessed how much the hypothesized independent variables selected in a predetermined order, explained the variance in psychological distress three years after graduation. By using a hierarchical multiple regression analysis we controlled for the influence from variables entered on the previous steps in the regression.

The main effect from student psychological distress when at graduation (t2) was entered at step one in the regression model. Empirical findings and theory clearly point to the significance of this variable when predicting psychological distress three years later on.

The variables measuring the experience working as a healthcare professional were entered as follows; we entered the work-home conflict variable at step two

since it may be associated with psychological distress and due to its measurement of a relationship between being a member of a family and a member of a work place (Christensson, Runeson, Dickman, & Vaez, 2010). Variables measuring support at the work site were entered in one block at step three. This factor at work is theoretically and empirically well documented in work psychology as being associated with psychological distress (Dalgard et al., 2007; Hausser et al., 2010). The variable measuring the professionals' experience of methodological competence in clinical work was entered at step four, assuming that the level of coping at clinical work is associated with levels of psychological distress. We entered a dummy variable at the last step to distinguish the nurses from the physiotherapist/occupational therapists, in order to see if nursing entailed specific stressors compared with the other health professions. All statistical analyses were performed on the IBM SPSS for MS Windows (Release 20).

## Results

Table 1

*Comparisons of Proportions of students with GHQ-12 Case-Scores higher than Cut off (GHQ 12 case score  $\geq 4$ ) for Completer Samples and Attrition Samples*

	Cases t2 Completer sample	Cases t3 Completer sample	Cases t2 Attrition sample
Nurses (%/N)	<b>27.4</b> * (n=84)	<b>13.1</b> * (n=84)	34.5 (n=113)
Physiotherapists (%/N)	10.7 (n=56)	7.1 (n=56)	22.1 (n=45)
Occupational therapists (%/N)	17.2 (n=29)	17.2 (n=29)	23.1 (n=21)

*Note.* Completer samples are those students/young professionals who participated in the StudData at t2 and t3. Attrition sample are those students who participated in the StudData at t2 and dropped out at t3. McNemar's test for related samples was applied for comparison of the t2 and t3 GHQ case rate for the completer samples of nurses, physiotherapists and occupational therapists. Chi square tests with Yates correction were applied for comparison of the t2 GHQ case rate for the completer samples and the attrition samples.

\* *McNemar's test*,  $p = .017$ .  $P$  value for nurses diff from t2 to t3.

Table 1 shows the percentage of cases with psychological distress in the completer sample for each of the three professional groups at t2 and t3. The case rate among the 84 nurses was reduced from 27.4% to 13.1% ( $p = .017$ ). This was the only significant change in GHQ case rates from t2 to t3 among the three groups. The Kruskal-Wallis test, comparing the case for the three groups, also showed significant difference between the groups at t2 ( $p = .05$ ), but no significant differences between the groups at t3 ( $p = .35$ ). The three groups in the attrition sample had all higher case rates at t2 than the groups in the completer sample at t2. The differences in case rates between the completer sample and the attrition sample at t2 were not significant ( $p = .83$ ,  $p = .19$  and  $p = .89$ , respectively).

Table 2

*Comparisons of GHQ-12 Likert-scores for Completer Samples at t2 and t3 and for the t2 Scores for the Completer samples and the Attrition Samples*

	t2 in Completer samples Mean (SD)	t3 in Completer samples Mean (SD)	t2 in Attrition sample Mean (SD)
Nurses	11.74 (5.28) (n=84)	<b>9.81*</b> (3.78) (n=84)	<b>13.42**</b> (6.29) (n=113)
Physiotherapists	10.21 (3.93) (n=56)	9.75 (3.47) (n=56)	11.33 (4.96) (n=45)
Occupational Therapists	10.62 (3.70) (n=29)	10.55 (3.84) (n=29)	11.81 (4.73) (n=21)

*Note.* Completer samples are those students/young professionals who participated in the StudData at t2 and t3. Attrition sample are those students who participated in the StudData at t2 and dropped out at t3. Paired samples t-tests were applied for comparison of the t2 and t3 GHQ Likert scores for the completer samples of nurses, physiotherapists and occupational therapists. Independent samples t-tests were applied for testing for significant differences between t2 scores for the completer samples and the attrition samples.

\* $p < .05$ .  $P$  value for diff t2 to t3. \*\* $p < .05$ .  $P$  value for diff completer samples t2 and attrition samples t2.

Table 2 shows the GHQ Likert scores for psychological distress in the completer samples for each of the three groups at t2 and t3, and GHQ Likert scores for the attrition sample at t2. Only the nurses' GHQ Likert scores differs significantly ( $p < .05$ ) from t2 to t3 among the three groups. The attrition samples from the three educations all had higher GHQ Likert scores at t2 than the completer samples at t2. The difference between the nurses in the completer sample vs. the nurses in the attrition sample was statistically significant ( $p < .05$ ). The logistic regressions applied to each of the three groups showed that only male nurses influenced the degree of attrition from t2 to t3 ( $p < .05$ ). Thirteen male nurses participated at t2 and two at t3.

Table 3 shows means and standard deviations for the independent variables psychological distress at t2, work-home conflict, co-worker support and experience of methodological coping in the job. The Univariate General Linear Model showed nonsignificant differences between the groups on the first three variables, while there was a significant difference between the nurses and the occupational therapists on the variable measuring experience of methodological coping. The nurses reported significant higher coping in their job than the occupational therapists.

Table 3

Mean, SD and N for each of the Groups on the Variables of GHQ-12 Likert at t2 and Work-Home Conflict, Co-Work Support and Experience of Methodological Coping at Work at t3

	<b>Nurses (n = 79 to 81)</b>	<b>Physiotherapists (n = 47 to 50)</b>	<b>Occupational therapists (n = 28 to 29)</b>	F value
GHQ-12 Likert-scores t2 Mean (SD) (3 to 26)	11.74 (5.28)	10.21 (3.93)	10.62 (3.70)	1.97
Work-home conflict t3 Mean (SD) (1 to 5)	2.04 (0.67)	2.03 (0.75)	1.89 (0.53)	0.55
Co-worker support t3 Mean (SD) (2 to 8)	6.52 (1.11)	6.32 (1.25)	6.48 (1.02)	0.47
Experience of methodological coping t3 Mean (SD) work (1 to 5)	4.00 (0.50)	3.76 (0.66)	3.62 (0.68)	<b>5.39*</b>

Note. One Way Overall ANOVA and Bonferroni Corrected Post-hoc Tests of Differences Between Groups.

\*significantly different n-o ( $p < 0.05$ )

Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity in the multiple regression analysis.

The results of the multiple regression analysis are shown in Table 4. The Likert GHQ scores at t2 accounted for 10% ( $p < .001$ ) of the variance in the t3 Likert GHQ scores. Controlled for the variables entered at the previous steps, experiencing work-home conflict added five percent ( $p < .05$ ), experiencing co-worker support added further seven % ( $p < .001$ ) and at the fourth step in the model, experiencing methodological coping at work added seven % ( $p < .001$ ) to the explained variance in the psychological distress three years into the young professionals' career. Entered at the last step, belonging to the nursing group per se, compared to belonging to the physiotherapy and/or occupational educations per se, added more or less nothing to the explained variation and was not a significant predictor of psychological distress at t3. The model explained 28.3% of the variance in the t3 Likert GHQ scores.

Table 4

*Hierarchical Multiple Regression Analysis. Prediction of Psychological Distress\* three years after finishing the Bachelor Educations by Psychological Distress at t2, Work-Home Conflict, Co-Work Support, Experience of methodological coping at work, and Professional Educational Assignment\*\**

<b>Step predictor</b>	<b>B</b>	<b>SE B</b>	<b><math>\beta</math></b>	<b>p</b>	<b>Expl.</b>	<b>R2change</b>
Block 1. Psych. Distress t2	.21	.06	.27	< .001	10.0%	
Block 2. Work–Home Conflict	.84	.40	.16	<.05	15.0%	4.9%
Block 3. Co-worker Support	.77	.23	-.24	< .001	21.5%	6.5%
Block 4. Method. Coping	-1.66	.44	-.27	<.001	28.3%	6.7%
Block 5. Prof. Assignment	-.33	.53	-.05	.54	28.3%	0.0%

\*Likert GHQ 12 t3 score. \*\* Nurses compared to physiotherapists and occupational therapists.

## Discussion

The main finding in our study is that the proportion of nurses with psychological distress was significantly reduced three years after ended education. This finding runs contradictory to our assumptions that an experience of practice shock among young professional nurses would contribute to heighten the psychological distress three years after graduation. Further, psychological distress among the three groups of students (t2) was the most important predictor of psychological distress three years after graduation (t3).

Occupational therapist- and physiotherapist students had lower psychological distress than nursing students at the completion of their programmes and for these groups attending work did not have any effect, positively or negatively, on their level of psychological distress. Furthermore, these two health worker-groups showed no effect of a possible practice shock on psychological distress. The nurse students in the attrition sample had higher level of psychological distress at t2 than the nursing completers had at t2. In Nerdrum (Nerdrum et al., 2009) one out of five nursing students reported psychological distress indicating psychological case level at the start of their studies, while one out of three reported case level at the end of the study. In this particular study, three years after completion, more than one out of four of the graduating nursing students reported case level of psychological distress, and three years after completion only one out of eight, reported psychological distress on a case level, similar to the two other professional groups in this study.

The regression analysis shows that the first two entered variables, psychological distress at t2 and work-home conflict, contributed together to a clear increase in the dependent variable (i. e. worsening mental health). The next two entered variables, co-work support and methodological coping, contributed together to a clear

decrease (improving mental health) in the dependent variable. Taken together these four variables explained 28.3% of the variance in psychological distress three years after graduation.

There is, however, no obvious reason that explains the lowered distress among the nurses in our data. Psychological distress among nurse students, however, has earlier been found to be associated with experienced low clarity in programme structure, excessive study workload and low quality of student climate. Compared to the two other student groups, which are smaller student bodies, the nursing students also reported a study situation characterized by less organizational transparency and greater problems in developing the student climate than the two other groups (Nerdrum et al., 2009). Therefore, graduating from education and developing as professional nurses might be one reason for our finding that nurses clearly lowered their psychological distress three years after finishing their education. Working as a professional nurse, working in sites having more organizational transparency and clarity in working methods and working goals than what students experienced during their education, may be plausible reasons for the reduced level of psychological distress in this particular group. Another explanation might be that the reported high level of coping among the young professional nurses compared with the two other groups, also has contributed to the nurses' improvement of their psychological distress.

Psychological distress when graduating was found to represent an important role in psychological distress three years after finishing bachelor's degree. Compared to the co-worker support, work-home conflict and experience of methodological coping at work, psychological distress at graduation contributed with the highest explained variance and was the most important predictor of psychological distress three years after graduation. As mentioned earlier, psychological distress can be regarded both as a state and a trait. In our dataset we have measurements of GHQ 12 also when the students started their education. The GHQ 12 measured at t1 correlates .21 ( $p < .05$ ,  $N = 119$ ) with the GHQ 12 measured at t3. Accordingly, the measurement of psychological distress also can be regarded as a trait that follows the students through their studies, and further on, into their young professional lives.

The influence from co-work support on the reduction of psychological distress can be seen from a developmental and self-psychological perspective. Young professionals' self-esteem is vulnerable at the start of their career. Skovholt and Rønnestad (2003) found in their study of therapist development that there was an increased risk for leaving the profession during the first year after graduation. They point to the importance of having caring and interested colleagues and supervisors for supporting and stabilizing the young professional's self-esteem. The feeling of being in the center for colleagues' empathic attention, can be seen as confirming the other persons' genuine self and thereby reducing psychological distress (Kohut, 1977). This is, in our understanding, what is mirrored by the item "People I work with take a personal interest in me." The strong association between co-worker support and psychological distress is perhaps our most important finding for intervention and possible reduction of psychological distress among young health professionals. These findings are in line with a former study which examined 899 social workers and the buffering effect of emotional support on job- and health

related stress (El-Bassel, Guterman, Bargal, & Su, 1998). They found that co-workers' social support reduced psychological distress.

It has earlier been suggested that stressful working conditions may be associated with an individual's well-being and have consequences for life at home and contribute to a work-home conflict (Westman, 2001). In our data, however, it is the other part of this conflict that clearly contributes mostly to how the work home conflict influences psychological distress: Family disturbs work performance. This is a surprising finding, which points in a different direction (home to work) than that reported by Westman (2001) and Christensson (2010). One possible explanation might be that young professionals in our study are in the beginning of a demanding career, and are therefore vulnerable to conflicts at home and their work performance.

Earlier in this article we referred to research on the burdens created by demanding interpersonal situations and serious patient illness, and how these factors could aggravate psychological distress in young health professionals. Nurses in particular, could be vulnerable to increased psychological distress because of their work with the total care of their patients. Our finding of a clear reduction in psychological distress among the nurses and the stability in psychological distress among the other two groups of young health professionals, allows us to speculate that the assumption that meeting reality (practice shock) when working with patients will increase psychological distress may be flawed. Our findings did not support the idea that there are differences between the professional groups. Belonging to one professional group or the other did not explain the variance in psychological distress three years after graduation.

### ***Limitations of the study***

The high attrition rate from t2 to t3 among the nursing students is the most serious limitation to studying changes in psychological distress and may jeopardize generalizations and external validity of the findings. The completer sample at t3 in our study comprises only 50% of the nurses that participated at the end of their studies. Tables 1 and 2 show that nursing students in the completer sample at t2, were suffering less from psychological distress than those who dropped out at t3. It is possible that high attrition rates partly reflect the higher burdens of problems in the nurse student group with regard to psychological distress. Effects from selective attrition may also be a limitation with regard to generalization about the changes in the psychological distress in the two other groups.

Our measurements are three years after graduation, so we cannot ignore that the group of nurses we studied may be beyond the time for a possible experience of so-called practice shock.

With regard to the generalizations of the finding of the level of psychological distress among the nurses at t3, we can however, compare with three other Norwegian nursing programs with data from the StudData. While the proportion of cases among the nurses in our study was 13.1% (total N = 84), the proportions of cases in the three other programs were respectively 14.4% (N= 97), 21.5% (N=65) and 15.9% (N =79). The differences between the four groups are not statistically significant, and thus strengthen the external validity of our findings.

This is a longitudinal study of psychological distress and psychological health among Norwegian students and their psychological distress as young professionals. National conditions for the health professional programs and work sites for professional health workers in Norway must be taken into consideration when assessing the external validity of the findings in the study.

With regard to the aim of predicting the professionals' psychological distress three years after finishing their studies, there are two more limitations that make it necessary to assess the findings with care. The first one concerns the predicting variance in a variable from other variables being measured at the same time. We will argue, however, that the professionals were asked to give a general assessment of their experiences from being a professional for three years when giving their ratings of work-home conflict, co-worker support and methodological coping, thus rating experiences not only connected to the moment of filling out the questionnaire. The second question is in line with the first and concerns our model for finding variables influencing psychological distress three years after graduation. This presupposes a direction from the independent to the dependent variables. However, it may be the other way around. Psychological distress at t3 (dependent variable) might influence the independent variables. The young professionals experiencing the highest degrees of psychological distress may be feeling a general high degree of frustration, thereby projecting their conflicts and deficits onto their perception of milieu at work and home reporting it to have worse qualities than the professionals who are suffering less from psychological distress. Both psychoanalytic theory (Shedler, 2010) and theories of personality (Beck & Dozois, 2011) emphasize that a person's perception of the external world is highly subjective and filtered by the person's cognition, conflicts, moods and mechanisms of defense. We will, however, point to one empirical argument supporting our assumption of the direction between the independent and dependent variables. The nursing students reported the same burden as the other two student groups when they began their program. The aggravation of their psychological distress came during their three years of education. Three years after graduation they reported a level comparable, and even better, than they had reported when they started their studies.

## Conclusions

The nursing students had a significantly higher level of psychological distress than the physiotherapist- and occupational-students at graduation. The nurses, however, had significant lower level of psychological distress three years after graduation, while there was no such reduction in occupational therapists and physiotherapists. This is an optimistic finding, compared to reports about young health professionals being especially vulnerable for increased psychological distress. In our study high psychological distress seems to be associated with being a nursing student and not with being a young professional nurse. The case rates among 84 nurses were reduced from 27% to 13%. This is a reduction of more than 50%.

Methodological coping and co-workers' support assessed at t3 were important factors explaining reduced psychological distress three years after graduation.

These two findings are possible areas for developing interventions for working sites that could reduce psychological distress and increase psychological health among young professional health workers.

The dependent variable in the study was psychological distress when working as young nurses, physiotherapists, and occupational therapists. From a salutogenetic perspective (Antonovsky, 1987), the findings in our study not only point to a decrease in psychological distress, but also to a clear improvement in psychological health among the young nurses. Improved psychological health may, as well point to the factors described by Dyrbye et al. (Dyrbye et al., 2005), reduce cynicism and improve empathy when working with patients.

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