The accuracy of nurses' estimates of their absenteeism

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Aim The purpose of the present study was to determine the accuracy of nurses' self-reports of absence by examining: (1) the correlation, intra-class correlation, and Cronbach's alpha for self-reported absence and absence as reported in organizational records, (2) difference in central tendency for the two measures of absence and (3) the percentage of nurses who underestimate their absence.

Background Research on nurses' absenteeism has often relied on self-reports of absence. However, nurses may not be aware of their actual absenteeism, or they may underestimate it.

Method Self-reported absence from questionnaires completed by 215 Canadian nurses was compared with their absence from organizational records.

Results There is a strong positive correlation, a strong intra-class correlation and Cronbach's alpha for the two measures of absence. However, there is a difference in central tendency that is related to the majority of nurses in this study (51.1%) underestimating their days absent from work.

Conclusions Research examining the predictors of absence may consider measuring absence with self-reports. Nevertheless, nurses demonstrated a bias to underestimate their absence.

Implications for nursing management Feedback interventions to reduce absenteeism can be developed to include providing nurses with accurate information about their absence.

Keywords: absenteeism, nurses, self-reports

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Introduction

With the growing nursing shortage in most countries, staffing – and in particular, the provision of registered nurses – has become a daily challenge for health care administrators. In a survey of Canadian nurses (CIHI 2006), 60% of the nurse respondents had been absent from work for health-related reasons in the year prior to the survey. Those who had been absent reported missing an average of 23.9 days of the year from work, and 14% of nurses reported being absent for 20 or more days. The Canadian Institute for Health Information

(2007) found that high absenteeism in health care workers is a problem, noting that in 2006, the average health care worker between 25 and 54 years of age missed nearly 12 days of work as a result of illness or disability, in comparison to 7 days missed by persons employed in other sectors.

Absenteeism has a profound impact on organizational costs and patient care. Absenteeism in the nursing profession not only creates a financial burden for healthcare facilities, but also impairs patient safety, because of increased workloads and increased stress on the remaining workers (Rauhala *et al.* 2007). In one

retrospective study, when both registered nurse absenteeism and patient load were high, there was an increase in use of patient restraints and patient deaths (Unruh *et al.* 2007).

Literature review

Self-reported absenteeism is an area that has received little attention and requires further research (Johns 1994b). In a landmark study, Johns (1994a) found that the majority of utility workers, when asked to self-report their days absent from the workplace, underreported their absenteeism by 3.82 days per year. Harrison and Shaffer (1994), in a series of absenteeism studies, found that a majority of workers reported their own absenteeism record as better than the company's average attendance rate.

Possible explanations for employees underestimating their absence include inability to remember information correctly and the need to see and present themselves positively. Self-reporting of personal information relies on both a person's ability to recall events and to report information accurately (Ross 1989). Recall is often shaped by the need for self-preservation (Ross 1989). People have a vested interest in the information they recall, as it has a direct impact on their feelings of self-esteem (Greenwald 1980). They may choose to remember only those events that yield a favourable self-evaluation, and to disregard information that is viewed as less than socially acceptable (Greenwald 1980; Baumeister 1999). The ability of a person to edit memory selectively – to recall positive information and disregard negative information – is a crucial step in the formation of a positive self-image (Greenwald 1980; Ross 1989). People are much more efficient at recalling successes than failures (Greenwald 1980). Furthermore, even on questionnaires, people may wish to present themselves positively to others. Absenteeism in the workplace is viewed as negative; therefore, nurses who wish to present themselves positively to others may underestimate their absenteeism.

While there is some empirical evidence that employees underestimate their absence (Harrison & Shaffer 1994, Johns 1994a,b) and that they believe they are absent less frequently than their coworkers (Harrison & Shaffer 1994), this phenomena has not been examined in nurses. If nurses are unaware of the number of sick days they have taken that year, but believe this number is less than the average for their work group, it is possible that they may feel it is fair that they take an occasional additional day. If this is the case, feedback about actual absenteeism may be a low-key intervention that leads to reduced absence. Gaudine and Saks (2001)

found a trend towards reduced absence in nurses after feedback, but did not measure nurses' estimates of their absence and therefore were unable to determine the reason the feedback intervention worked.

While nurse absenteeism is an important topic of study for nursing, the majority of studies measure nurses' absenteeism through self-reports. However, studies finding an association between perceived negative working conditions (e.g. high workload and work stressors) or factors associated with a poor work environment (e.g. low organizational commitment, work stress, burnout and low job satisfaction) and absence have been criticized when absence was measured by self-reports because of common method bias (Kivimäki *et al.* 1997).

Despite the reliance on self-reported measures of absence, only a few studies have compared self-reported measures of absence with organizational records. One hundred and fifty-four employees working at a pharmaceutical company in The Netherlands were asked to write the number of days they had been sick during the past 2 weeks, 4 weeks, 2 months, 6 months and 12 months (Severens *et al.* 2000). Their responses were compared with organizational records. It was found that 95% of the employees reported a similar absence as organizational records at 2 and 4 weeks, whereas the percentages reporting similar absences at 2, 6 and 12 months were 87, 57, and 51%, respectively. Another study of 312 employees in an airline cargo department in The Netherlands found self-reported absence on questionnaires which asked about absence in the last month were an inaccurate measure of actual absence (Van Poppel *et al.* 2002).

In a study of British civil servants (2406 women and 5589 men), the relationship between self-reported sickness absence and organizational records was examined (Ferrie *et al.* 2005). Self-reported sickness was measured by the questionnaire item 'In the last 12 months, how many days were you off work for health reasons?' They found a Spearman's rho correlation of 0.79 for women and 0.75 for men, with 63% of women and 67% of men reporting their absence within 2 days of that recorded by the organization.

While the studies by Severens *et al.* (2000) and Van Poppel *et al.* (2002) would seem to make the practice of measuring absence through self-reports instead of organizational records questionable, the study by Ferrie *et al.* (2005) shows an encouraging correlation between these measures of absence. However, these studies were not done with nurses and it is not known if the employees' pay stubs noted sick time taken during that pay roll period or kept a log of accumulated sick time hours available for use, practices common in hospitals.

Study purpose

The purpose of this study is to examine the accuracy of nurses' self-reports of absence by determining: (1) the correlation, intra-class correlation and Cronbach's alpha for nurses' absenteeism as measured by self-reports, and absenteeism as measured in organizational records; (2) the difference in central tendency for the two measures of absence; and (3) the percentage of nurses who underestimate their absence. Specifically, the study's hypothesis is that nurses are accurate in reporting their absence.

If self-reported absenteeism has a high correlation, intra-class correlation and Cronbach's alpha with absenteeism as recorded in organizational records, then we can have confidence in studies that examine the predictors of absences using self-reported absence. If an accurate estimate of absent days is required, it is important to have confidence that the central tendency for the two measures of absence have no significant difference. Furthermore, if nurses underestimate their absence, then providing them with accurate information about this may potentially be used in interventions to reduce absenteeism.

Methods

Design

This research is part of a larger study being conducted in Atlantic Canada in which nurses completed two surveys 1 year apart and gave consent to have their organizational absence records linked with their surveys through use of identification numbers. The study compares self-reports of absence on the 2nd questionnaire with absence from organizational records. The study design is correlational and descriptive.

Participants and setting

Participants comprised 215 direct care nurses employed in three Atlantic Canada acute care hospitals, of whom 150 held diplomas, 60 bachelor degrees and two masters degrees (note: a few participants did not report demographics). Their ages ranged from 23 to 60 years with a mean age of 40.15 years ($SD = 8.90$). The majority ($n = 197$) were female and 179 were employed on a full-time basis, 26 part-time and seven casual. Years worked with the present employer ranged from 1.5 to 34 years, with a mean of 14.23 ($SD = 9.38$).

Each of the three hospitals in the study has a similar attendance management process in place. The employees in all three sites are provided with a printed record

on their biweekly pay stub of benefit time (such as time taken for sickness, injury and personal/business) used in that particular pay period. The biweekly paystub also contains a listing of the employee's current balances of accumulated available sick time hours. There are processes in place at all three hospitals for notifying and interviewing employees who exceed acceptable sick time, with the acceptable rate of absenteeism determined by each hospital.

Measures

Self-reported absence. Self-reported absence was measured on the second survey with three items developed by the investigators of the larger study. These items were tested for clarity on the first survey and reworded for the second survey. Participants were asked to respond to questions on the questionnaire survey to provide a measure of self-reported absenteeism. Each respondent was asked to answer the following three questions: (1) How many days were you off the job in the last year for sickness (colds, flu, injuries, etc.)? (2) How many days were you off the job in the last year for mental health (stress, burnout, etc.)? and (3) Excluding vacation and statutory holidays, and excused time (e.g., compassionate leave, educational leave, parental leave, union leave), how many total days were you off for personal and family business? Respondents' self-reported absence was calculated by adding the number of days estimated for these three items. We used the three questions because these relate to the three areas that are considered 'unsanctioned absence'. Furthermore, different organizations may use separate codings or combine these types of absences, and we wanted to ensure we were comparing the total of these three types of absences in our correlations.

Absence from organizational records. The measure of absence from organizational records was the total number of days taken off for the following three items: (1) the amount of time (in days) he/she had taken off from work for sickness (colds, flu, injuries, etc.); (2) mental health (stress, burnout, etc.); and (3) personal/family business (family events, doctor's appointments, etc.). The same 12-month period was used to measure both the self-reported and organizational absence data, which was 1 October 2004 to 30 September 2005 for the first hospital where data was collected, 1 January 2005 to 31 December 2005 for the second hospital and 1 September 2005 to 31 August 2006 for the third hospital.

Absence data were collected over a 1-year period (the typical duration of earlier research on absenteeism) in order to account for any seasonal variations in

absenteeism, as well as because data collection at the three hospitals began at different times of the year. Furthermore, organizations that have programmes to monitor absenteeism typically give employees feedback about the number of days they were absent over a 1-year time period.

Ethical considerations

Ethical approval was obtained from the Human Investigation Committee (HIC) at Memorial University of Newfoundland and from the research ethics boards at the three hospitals. Participation was voluntary and a signed consent was obtained prior to initiating the study. Each participant's surveys were identified with an identification number, and his or her absenteeism data were identified with a different identification number. A master list linking participants with both identification numbers was kept in a locked location.

Results

The data were analysed using SPSS Statistics 17.0 for windows (SPSS Inc., Chicagao, IL, USA). Because absence data is highly skewed and truncated at zero, the data were transformed using logarithm base 10 plus one transformation. This helped to normalize the distribution of the data (an assumption of Pearson's r and paired t -test).

The mean (M), standard deviation (SD) and numbers (n) for age, tenure, self-reported and organizational absenteeism for the overall study are shown in Table 1.

Sixteen of the 192 nurses who reported their absence identified that they had no absences, whereas 12 of the 203 organizational records reflected zero absences. Of the 16 nurses who identified they had no absences, six organizational records reflected no absences.

Pearson's r correlations between age, tenure, transformed and untransformed absenteeism data from the self-report surveys and the organizational records are presented in Table 2. There is a strong positive correlation between transformed self-reported absenteeism and absenteeism from organizational records ($r = 0.80$, $P < 0.01$), as well as between the untransformed self-reported absenteeism and absenteeism from organizational records ($r = 0.90$, $P < 0.01$). A positive correlation of small effect is found between tenure and transformed absenteeism from organizational records ($r = 0.15$, $P < 0.05$) and between tenure and untransformed self-reported absenteeism ($r = 0.16$, $P < 0.05$).

Spearman's rho between the untransformed self-reported absenteeism and absenteeism from organiza-

Table 1

Means, standard deviations and numbers for age, tenure and absenteeism measures

Variable	<i>M</i>	<i>SD</i>	<i>N</i>
Age (years)	40.15	8.90	210
Tenure (years)	14.23	9.38	211
Absenteeism self-report surveys (days)	12.60	25.92	192
Log absenteeism self-report surveys	0.88	0.44	192
Absenteeism organizational records (days)	15.19	29.03	203
Log absenteeism organizational records	0.96	0.44	203

Table 2

Correlations between age, tenure and absenteeism measures

Variables	1	2	3	4	5	6
1. Age	–					
2. Tenure	0.79**	–				
3. Log absenteeism organizational records	0.09	0.15*	–			
4. Log absenteeism self-report surveys	0.07	0.11	0.80**	–		
5. Absenteeism Organizational records	0.06	0.08	0.68**	0.70**	–	
6. Self-reported absenteeism	0.09	0.16*	0.54**	0.68**	0.90**	–

*Correlation is significant at the 0.05 level (two-tailed).

**Correlation is significant at the 0.01 level (two-tailed).

tional records was also calculated and found to be 0.79 ($P < 0.01$).

Intra-class correlation was calculated to examine the agreement between the two measures of absence (self-reports and organizational records). The intra-class correlation between transformed self-reported absenteeism and absenteeism from organization records was 0.80 ($n = 184$, $F = 8.92$, $P < 0.01$) for single measures and 0.89 ($n = 184$, $F = 8.92$, $P < 0.01$) for average measures, with Cronbach's alpha = 0.89. The intra-class correlation between untransformed self-reported absenteeism and absenteeism from organization records was 0.79 ($n = 184$, $F = 8.51$, $P < 0.01$) for single measures and 0.88 ($n = 184$, $F = 8.51$, $P < 0.01$) for average measures, with Cronbach's alpha = 0.88.

Paired t -tests and Wilcoxon's signed ranks test were used to test for a difference in central tendency between the two measures of absence. The paired t -test for transformed self-reported absenteeism and absenteeism from organizational records showed a significant difference ($t = -2.68$, $P < 0.01$), and for untransformed self-reported absenteeism and absenteeism from organizational records was non-significant ($t = 0.57$, $P = 0.57$). Table 3 shows Wilcoxon's signed ranks test for the transformed and untransformed absence measures,

Table 3

Wilcoxon's signed ranks test for untransformed and transformed absenteeism measures

		<i>N</i>	<i>Mean rank</i>	<i>Sum of ranks</i>	<i>Z</i>	<i>P</i>
Absenteeism from organizational records – Absenteeism from self reports	– ranks	60*	75.48	4529.0	–2.60	<0.01
	+ ranks	94†	78.79	7406.0		
	Ties	30‡				
	Total	184				
Transformed absenteeism from organizational records – Transformed absenteeism from self reports	– ranks	60§	73.68	4421.0	–2.80	<0.01
	+ ranks	94¶	79.94	7514.0		
	Ties	30**				
	Total	184				

*Absenteeism from organizational records < Absenteeism from self reports.

†Absenteeism from organizational records > Absenteeism from self reports.

‡Absenteeism from organizational records = Absenteeism from self reports.

§Transformed absenteeism from organizational records < Transformed absenteeism from self reports.

¶Transformed absenteeism from organizational records > Transformed absenteeism from self reports.

**Transformed absenteeism from organizational records = Transformed absenteeism from self reports.

with both tests showing a significant difference ($P < 0.01$), because of a higher frequency of absenteeism from organizational records being higher than from self-reports.

The percentage of nurses who accurately reported, underreported and over reported their absenteeism as compared with organizational records was determined. Results showed that only 16.3% of the surveyed nurses accurately estimated their absenteeism, whereas 32.6% overestimated their absenteeism. The majority (51.1%) of nurses underestimated their absenteeism. Furthermore, 98 or 53.3% of these 184 nurses showed a discrepancy in self-reported absenteeism and organizational records between –2 and +2 days.

Discussion

Few recent studies have examined self-reported absenteeism, and this is the first we are aware of that compares nurses' self-reported absenteeism to organizational records. The results show a strong positive correlation ($r = 0.80$, $P < 0.01$) between the transformed data for nurses' self-reported absenteeism and organizational records. While the raw data for absenteeism is truncated at zero and positively skewed, failing the assumption of normality for Pearson's r correlations, we nevertheless calculated the correlation for the untransformed data for nurses' self-reported absenteeism and absenteeism from organizational records, and found this was also strongly positive, as was the Spearman's rho. Similarly, Ferrie *et al.* (2005) found a Spearman's rho correlation of 0.79 between self-reported absence and organizational records in their study of British civil servants. We also found a strong positive intra-class correlation for both the transformed and untransformed absence measures. Furthermore, we

found a high Cronbach's alpha for both the transformed and untransformed measures (0.89 in both cases).

The fact that absenteeism from self-reports and organizational records are strongly correlated, and that intra-class correlations and Cronbach's alphas for both absence measures are high, suggests that research may consider measuring absenteeism with self-reports rather than organizational records, which involves obtaining written consent from study participants and working with organizations to obtain the participants' absence rate, a time-consuming and costly procedure for both researchers and organizations.

Nevertheless, if accurate values of absence are required, the difference in the paired t-test for the transformed absence measures and the difference in Wilcoxon's signed ranks test for both the transformed and untransformed absence measures reflect the tendency of persons to underreport their absence, and hence a lower value for self-reported absence.

Our findings support the literature that suggests the majority of employees may have a self-serving bias regarding their absenteeism (Harrison & Shaffer 1994, Johns 1994a,b, 2003). Only 32.6% of the nurses surveyed for this study overestimated their absenteeism, whereas 51.1% underestimated their absenteeism. This finding is particularly noteworthy, given the procedures the three hospitals in this study used to keep nurses informed about their absenteeism. One would expect that workers who are employed in organizations that put emphasis on attendance management would be more accurate in their estimates of absenteeism. Our finding that nurses working in hospitals with attendance management programmes did not accurately estimate their absence supports an earlier finding by Johns (1994a), who noted that organizations with a culture supporting attendance management showed no

significant difference in the accuracy of their employees' self-reported absenteeism compared with organizations that did not support attendance management.

The hospitals included in this study provide absenteeism information on the employees' biweekly pay stubs. Absence time used during each specific pay period is provided but not cumulated to show all sick time used. Accumulated unused sick benefit time is given. This study demonstrates that despite having this information, the majority of nurses still underestimated their absenteeism. If feedback on pay stubs regarding absenteeism is not user friendly, then organizations could consider presenting this information in a clear manner, providing accumulated days absent instead of accumulated unused sick time.

A possible reason for employees underreporting their absenteeism is that they may have difficulty with recall over such a significant period of time as 1 year. In this study, as in most studies of absenteeism, we used a period of 1 year to avoid the problems of seasonal variations and hence, invalid measures of absence implicit in shorter time frames. However, the 1-year timeframe may undermine accurate self-reports, as a result of recall issues. One would expect recall problems to give equal numbers of over- and underestimates (Johns 1994b). This study found that the majority of nurses could not accurately recall their absenteeism, and self-reported a lower number of absence days than was recorded in the organizational absence records. This is useful information for future researchers who should question the validity of self-reports when studying absenteeism.

Implications for nursing management

Providing people with evidence of their performance on a consistent basis can help to shape positive behaviour; however, people need feedback to determine if they are meeting personal goals (Bandura 1997, 2000). The findings from this study can be used to demonstrate the need for clear, user-friendly, timely feedback for nurses to have an accurate awareness of their absenteeism. When nurses are aware of their absenteeism, they may be able to self-monitor their rate and set a goal for attendance.

However, we caution against a common practice of providing employees with the mean absenteeism of a professional or work group. As absenteeism days is positively skewed, when employees are told their own absence rate and the mean for all employees, the majority will realize that their absence is less than the mean. As group norms are believed to predict absence (Mathieu & Kohler 1990, Johns 1997), informing employees of the mean absenteeism of their work group may actually in-

crease absence. For the 203 participants in this study for whom organizational records were available, the mean absence was 15.19 days (SD = 29.03) but the median was 9.5 days, indicating that 50% of the participants had absenteeism of <9.5 days. In this particular sample, if participants had been told the mean absence of employees was 15.19, 76% of the participants would have been informed their absence was below the mean.

The finding that nurses show a tendency to underestimate their absence may be helpful when planning absence interventions. For example, nurses may tend to think of their absence in terms of how many days they have taken in the past year, as well as how this compares with the absence rate of their colleagues. Based on employee underestimates of their absence and overestimates of their coworkers' absence, Johns (1994a) suggested that providing absence information might lead to improved attendance. Several studies have looked at the impact of providing feedback to nurses about their absence and found a trend that suggests this lowers absenteeism (Gaudine & Saks 2001, A. Gaudine *et al.* unpublished data). The intent of these feedback interventions was to base them on the realization that it is in no one's best interest if nurses come to work when they are sick. In contrast to many absence interventions, the researchers did not want an intervention that would make nurses who already have low absenteeism to feel guilty about taking a day off, or that singled out persons with high absences, and thus could be viewed as a punitive intervention. It was felt that keeping all nurses informed of their absence in a neutral, non-punitive way might help them to self-monitor their behaviour and help improve attendance.

The three hospitals included in the study provided letters to employees with excessive sick time. A suggestion could be made that in addition to sending letters to those who have excessive sick time use, it might be beneficial to send letters quarterly to all employees showing their current absenteeism. Sending the letters quarterly instead of yearly would allow the employee/employer to seek interventions to correct excessive sick time in a timely manner. Sending letters to all employees may reduce possible feelings of anxiety and guilt felt by employees who are singled out for excessive sick time use, and absenteeism feedback may be viewed in a more positive manner (Gaudine & Saks 2001). It is a low-key absenteeism intervention, which is important in avoiding sickness presenteeism, a name coined by Aronsson *et al.* (2000) to identify the issue of attendance at work when sick. Given the current emphasis on pandemic planning and the need to contain infections such as the

H1N1 virus or SARS virus, the need to address excessive absence without causing presenteeism is particularly important. Further research is needed regarding the effectiveness of absence interventions based on feedback about absence, together with investigation of how nurses feel about these interventions.

Limitations

This study was conducted in three Atlantic Canada hospitals and may reflect behaviours that are unique to that region of Canada and to the context of the three hospitals, therefore limiting the generalizability of the findings. Also, the findings may not be generalizable because the participants were volunteers and because those who were off work because of illness were not available to volunteer. The reasons for underestimating absence were not examined. This is an interesting area for future research.

Conclusion

This study found a high correlation between absenteeism measured by self-reports and organizational records, indicating that researchers' use of self-reported measures of absence may produce credible findings. Further, this study supports others that found employees underestimate their absenteeism, and provides information about nurses' perceptions of their absence. Qualitative research that provides insight into nurses' absenteeism could be invaluable when exploring strategies to minimize the existing nurse shortage.

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