



Dealing with Patients with Behavioural Problems After Acquired Brain Injury: Nurses' Experiences with the Antecedent Behaviour Consequence Method

RESEARCH

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ABSTRACT

Context: Behavioural problems are common after brain injury and can cause feelings of distress in the nursing staff, which can in turn have a negative influence on the behaviour of the patient. Nurses often do not feel they have the necessary skills to apply behavioural interventions in daily practise. They may benefit from the ABC (Antecedent-Behaviour-Consequence) method.

Objective(s): This study examined nurses' impressions of the effects after implementation of the ABC method on a brain-injury ward.

Method(s): This study is part of the long-term follow-up (LT-FU) of our longitudinal group intervention study. Nurses were asked to complete a questionnaire once at the time of the LT-FU. Outcome measures were based on the theory of planned behaviour (Ajzen, 1991). Descriptive statistics were used.

Findings: After implementation of the ABC method, most nurses reported they perceived behavioural control, received social support, had few feelings of fear, and had confidence in the way they deal with behavioural problems. Moreover, nurses reported positive changes in all these topics since working with the method.

Limitations: Although first findings are interesting, we must also underline that the absence of a baseline measurement is a shortcoming of the study.

Implications: Training nursing staff in managing behavioural problems with the ABC method might give them more perceived control and decrease feelings of distress and fear.

Further longitudinal research is needed to investigate these experiences of the nursing staff to examine whether this has a positive effect on their well-being, job-satisfaction, and the behavioural problems of patients.

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KEYWORDS:

nursing staff; ABC method; behavioural management; behavioural problems; brain injury

TO CITE THIS ARTICLE:

Pouwels, C, Spauwen, P, van Heugten, C, Botteram, R, Winkens, I and Ponds, R. 2024. Dealing with Patients with Behavioural Problems After Acquired Brain Injury: Nurses' Experiences with the Antecedent Behaviour Consequence Method. *Journal of Long-Term Care*, (2024), pp. 54–61. DOI: <https://doi.org/10.31389/jltc.182>

INTRODUCTION

Aggression is one of the most disruptive behaviours related to acquired brain injury (ABI) (Edward et al., 2014; Zwijsen et al., 2014) and can be expressed in different ways, such as verbal and/or physical aggression (towards a person or object or self-harm). Verbal aggression is more common than physical aggression (Alderman, 2007). Aggression puts a high emotional burden on the patient's family (Alderman, 2007; Azouvi et al., 1999) and can create feelings of distress in the nursing staff (Edward et al., 2014; Zwijsen et al., 2014). A review by Needham et al. (2005) shows that behavioural problems, especially aggression, cause nurses who work with psychiatric patients to experience more feelings of fear, guilt, and powerlessness.

The behaviour of the nursing staff can also have an effect on the problem behaviour of patients (Alderman, 2007; Visscher et al., 2011). Incidents of aggression are often preceded by interaction with the nursing staff, especially by the way nurses communicate with patients (e.g., inflexible approach, setting limits) (Alderman, 2007; Edward et al., 2014; Pryor, 2004; Visscher et al., 2011).

According to the theory of planned behaviour (Ajzen, 1991), behaviour is explained by a person's intention and perceived behavioural control. There are three independent variables that predict intention: i. behavioural attitude: judgement and feeling for or against the behaviour; ii. subjective norm: the perceived social pressure in the environment; and iii. perceived behavioural control: the perception whether the behaviour you need to perform will be easy or difficult. However, these are likely to vary depending on the situation or context (e.g., showering someone who was previously aggressive versus showering someone unfamiliar with aggression), even if the behaviour is the same (showering someone). The degree of perceived behavioural control is influenced by the availability of resources and opportunities (e.g., time, skills, etc.), also referred to as actual control. Sufficient knowledge about brain injury is also important to correctly attribute behavioural problems as a consequence of brain injury. This allows nurses to provide more appropriate care (Linden & McClure, 2012). So, the behaviour of nursing staff in response to behavioural problems of patients can be explained by the nurses' attitude, the social norm of colleagues (Ajzen, 1991), the nurses' knowledge of brain injury (Linden & MacClure, 2012) and skills in managing behavioural problems and their perceived control of the behaviour (Ajzen, 1991). Nurses often do not feel they have the necessary skills to apply behavioural interventions in daily practice (Alderman, 2001; Wood & Aldermen, 2011). Therefore, it is important to train nursing staff in managing behavioural problems.

One method that can be used to train nursing staff in managing behavioural problems is the ABC method, a simplified form of behavioural modification therapy,

which has been especially developed for nursing staff in nursing homes (Cohn, Smyer & Horgas, 1994). ABC represents *Antecedents (triggers of the behaviour), Behaviours, and Consequences*. The principal idea is that situational factors (e.g., pain, a lot of noise in the living room, or the communication of the nurse) trigger or influence the frequency and intensity of the behaviour of the patient. The consequence of the behaviour (e.g., reaction of the nurse or another patient) also influences whether or not the behaviour will continue and in what intensity. A key component of the ABC method is a detailed and structured observation by the nursing staff, in which they have to answer questions each time the behaviour occurs (e.g., has something happened in the patient's environment that preceded the behaviour). Based on these observations a functional assessment of the behavioural problem is made by the nursing staff, together with a psychologist. Using this analysis, a patient- and situation-tailored intervention is made to reduce the behavioural problem. Furthermore, in this process the nursing staff obtain more knowledge about behavioural problems and their triggers, including the impact of their own behaviour, due to the training and working with the ABC method. A more extensive description of the ABC method can be found in Winkens et al. (2019).

Based on the theory of Ajzen (1991), it can be hypothesized that applying the ABC method increases the knowledge and skills of the nursing staff, changes their attitude towards behavioural problems, raises their perceived control of these problems, and increases cooperation and support within the nursing team, which may lead to less fear experienced by the nursing staff. Previous studies have shown that methods comparable to the ABC method led to positive changes in the practice of the nursing staff. For example, McCabe et al. (2015) found a decrease in strain generally and an increase in self-efficacy.

To the best of our knowledge, the effect of the ABC method on nursing staff, with outcome measures based on the above-mentioned theory of planned behaviour, has not yet been researched. Therefore, the objective of this study was to examine the following: i. attitude, ii. social support within the team and social norm of colleagues, iii. perceived control of behaviour, and iv. feelings of fear of nurses working with ABI patients with severe neuropsychiatric problems 18 to 36 months after introducing the ABC method. Finally, the nurses' self-reported changes on all these topics were examined.

METHOD

PARTICIPANTS

Two residential wards in the Netherlands were involved in the present study, Department Ter Poorteweg of SVRZ (Stichting voor Regionale Zorgverlening) and Department S3, Huize Padua (HP) of GGZ Oost Brabant. All members of the nursing staff with permanent employment working

in the facility at baseline and at the time of the present long-term follow-up study participated in this study.

In addition, patients staying at the departments at the time of the measurements and fulfilled the inclusion criteria (non-progressive ABI, for example traumatic brain injury or stroke, according to medical records, ≥ 18 years of age, sufficient command of language (by clinical judgement), no post-traumatic amnesia, no decreased consciousness during assessment and giving approval for participation) (Winkens et al., 2019) were included.

This study was carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki). The Medical Ethics Committee of Maastricht University Medical Centre (reference number MEC 11-4-027) and all participating departments approved the study protocol. All patients or their legal representative gave informed consent.

DESIGN

This study is part of the long-term follow-up (LT-FU) of our longitudinal group intervention study. The primary goal of our group intervention study was to measure the effect of the ABC method on the behavioural problems of ABI patients (Winkens et al., 2019). A trend was shown towards a decrease of the patients' behavioural problems, albeit not significant. Nurses rated the method as instructive, but also reported that it was not yet part of routine at the time of the three months follow-up measurements (Pouwels et al., 2019; Winkens et al., 2019). Therefore, a LT-FU study was conducted. One element measured the effects of the ABC method on behavioural problems (Pouwels et al., 2019) and this study element measuring the experiences of the nursing staff working with the ABC method.

In the original study, the baseline assessments of behavioural problems took place six weeks before the ABC method was introduced on the wards (B0) and immediately before its introduction (B1). Immediately after the second baseline assessment, nurses had a three-day training course in the ABC method, specifically for patients with ABI, with a total duration of 15 hours including theory (about brain injury, behavioural problems, and the ABC method) and practical exercises. After the training the nurses started using the method and were urged to continue this beyond the follow-up measurement period. Follow-up assessments took place immediately (FU1) and nine weeks (FU2) after the introduction of the method. The long-term follow-up (LT-FU) study took place three years after FU2 at HP and one and a half years after FU2 at SVRZ.

For the current study only the LT-FU data were used and demographic information on the patients (gathered at baseline) to provide information on their characteristics. During the LT-FU, we gathered demographic information on the nursing staff. In addition, we studied self-reported changes by completing a questionnaire (see Table 2) by the nursing staff in terms of attitudes regarding behavioural problems, perceived control of behaviour, social support within the team, social norms

of colleagues and feelings of fear at the LT-FU. Nurses were also asked for their opinion about the effectiveness of the ABC method in reducing behavioural problems.

MEASUREMENTS

Demographic characteristics of the nursing staff and the patients

Gender, age, level of education, years of experience, time working in the facility, and the contractual status of the nursing staff were obtained through a questionnaire designed by the authors. Information on gender, age, time since injury and psychiatric comorbidity of patients was obtained through examination of patients' medical files at baseline. The Dutch Neuropsychiatric Inventory (NPI) (Cummings et al., 1994; Jonghe, Borkent & Kat, 1997), a caregiver scale for measuring the frequency and severity of behavioural problems, was used to measure the problem behaviour of the patients. Both the total score (range 0–144) and the score on the subscale agitation/aggression at baseline (range 0–12) were used.

Attitude towards aggression scale

The Attitude Towards Aggression Scale (ATAS) is a reliable Dutch, 18-item questionnaire designed to measure the attitudes of nurses towards aggression (Jansen, Middel & Dassen, 2005; Jansen et al., 2006). Nurses had to indicate on a 5-point scale, from 1 (totally disagree) to 5 (totally agree), to what extent they agreed with the statements about aggression. There are five dimensions with internal consistency: offensive attitude ($\alpha.83$), communicative attitude ($\alpha.63$), destructive attitude ($\alpha.60$), protective attitude ($\alpha.63$), and intrusive attitude ($\alpha.62$) (Jansen, Middel & Dassen, 2005; Jansen et al., 2006). Additionally, nurses were asked if they thought their attitude had changed since working with the ABC method (Table 2).

Questionnaire on perceived control of behaviour, social support within the team, the social norm of colleagues, feelings of fear, and perceived changes since working with the ABC method

Nurses completed a questionnaire about perceived behavioural control, social support within the team, the social norm of colleagues, feelings of fear, and about their perceived changes since working with the ABC method. This questionnaire was developed by our research team based on the theory of planned behaviour (Ajzen, 1991) and the questions used by Jonker et al. (2008) (Table 1). Answers were given on a 5-point Likert-scale. An example of a question is: 'How difficult is it to deal with behavioural problems at the department?' See Table 2 for all questions.

Nurses' opinions on the effectiveness of the ABC method

Nursing staff were asked to answer the question, 'Do you think the ABC method helped to reduce behavioural problems on the ward' using a 5-point Likert-scale (totally disagree–totally agree).

| | <i>N</i> | % | MEAN (SD) | RANGE |
|--|----------|------|---------------|--------|
| Nursing staff | | | | |
| Age | 29 | | 44.3 (10.3) | 23–58 |
| Gender | 29 | | | |
| <i>Male</i> | 3 | 10.3 | | |
| <i>Female</i> | 26 | 89.7 | | |
| Education* | 27 | | | |
| Secondary vocational education Level 2 | 4 | 14.8 | | |
| Secondary vocational education Level 3 | 17 | 63.0 | | |
| Secondary vocational education Level 4 | 6 | 22.2 | | |
| Years of working experience | 28 | | 17.1 (8.5) | 4–35 |
| Years working on the ward | 26 | | 8.9 (15.5) | 3–26 |
| Working hours | 29 | | 25.6 (7.0) | 11–36 |
| Patients | | | | |
| Age | 40 | | 61.6 (9.7) | 42–84 |
| Gender | 40 | | | |
| <i>Male</i> | 32 | 80.0 | | |
| <i>Female</i> | 8 | 20.0 | | |
| Time since injury (months) | 24 | | 214.0 (171.0) | 12–679 |
| Co-morbid Psychiatric disorder | 19 | 47.5 | | |

Table 1 Demographic characteristics of the nursing staff and the patients.

* In the Dutch school system, secondary vocational education can be divided into four levels of training (level 1 is lowest level and level 4 is highest level).

ANALYSES

Descriptive statistics (percentages, mean, standard deviation and range) were used to analyse all data. All statistical analyses were conducted using IBM SPSS 21.0.

RESULTS

DEMOGRAPHIC CHARACTERISTICS OF THE NURSING STAFF AND THE PATIENTS

A total of 29 nurses, mostly women (89.7%) with a mean age of 44.3 years (SD 10.3) were included in the study. Most of them worked part-time, with a mean total working experience of 17.1 years and mean working experience of 8.9 years (SD 15.5) at the current facility (Table 1).

A total of 40 patients participated in the current study. Patients were predominantly male (80%); the mean age was 61.6 years (SD 9.7); and the mean time post-injury was 214 months (range 12–679). Nearly half of the patients (47.5%) had a comorbid psychiatric disorder (Table 1). The mean total score on the NPI was 19.7 (SD 19.1) and the mean score of the subscale agitation/aggression was 3.1 (SD 3.5).

ATTITUDE TOWARDS AGGRESSION SCALE (ATAS)

Twenty-eight nurses answered the question whether their attitude regarding aggression had changed since working with the ABC method, and according to 39.3% of the nurses, their attitude had changed (Table 2).

PERCEIVED BEHAVIOURAL CONTROL, SOCIAL NORM OF COLLEAGUES, FEELINGS OF FEAR, AND SELF-REPORTED CHANGES ACCORDING TO THE NURSING STAFF SINCE WORKING WITH THE ABC METHOD

Regarding perceived behavioural control, most nurses reported they perceived having control over the behavioural problems of the patients (71.4%, score ≥ 4) and have confidence in dealing with behavioural problems (89.3%, score ≥ 4). All nurses perceived having control in the way they deal with the behavioural problems (100%, score ≥ 4). Regarding social support, most nurses (81.7%, score ≥ 4) reported that they experience the social support of colleagues when confronted with behavioural problems, and 63% of the nursing staff (score ≤ 2) reported that they deal well with behavioural problems according to their colleagues

| | | 1 | 2 | 3 | 4 | 5 |
|------------------------------|--|---------------|---------------|---------------|---------------|---------------|
| 1 N = 28 | Has your opinion or attitude about aggression changed since you work with the ABC method? (1 = not at all – 5 = yes, totally) | 4 (14.0%) | 1 (3.6%) | 12 (42.9%) | 10 (35.7%) | 1 (3.6%) |
| 2a N = 28 | How difficult is it to deal with behavioural problems at the department? (1 = not difficult – 5 = very difficult) | 3 (10.7%) | 16 (57.1%) | 7 (25%) | 2 (7.1%) | 0 (0.0%) |
| 2b N = 28 | How much has this changed since you began working with the ABC method? (1 = not at all – 5 = very much) | 0 (0.0%) | 3 (10.7%) | 12 (42.9%) | 8 (28.6%) | 5 (17.9%) |
| 3a N = 28 | How much confidence do you have in your ability to deal with behavioural problems? (1 = no confidence – 5 = much confidence) | 0 (0.0%) | 0 (0.0%) | 3 (10.7%) | 17 (60.7%) | 8 (28.6%) |
| 3b N = 28 | How much has this changed since you began working with the ABC method? (1 = not at all – 5 = very much) | 0 (0.0%) | 1 (3.6%) | 8 (28.6%) | 13 (46.6%) | 6 (21.4%) |
| 4a N = 28 | Do you experience control over the behavioural problems of patients? (1 = I experience no control – 5 = I usually experience control) | 0 (0.0%) | 1 (3.5%) | 7 (25.0%) | 14 (50.0%) | 6 (21.4%) |
| 4b N = 28 | How much has this changed since you began working with the ABC method? (1 = not at all – 5 = very much) | 0 (0.0%) | 1 (3.6%) | 8 (26.8%) | 14 (50.0%) | 5 (17.9%) |
| 5a N = 28 | Do you experience control in the way you deal with the behavioural problems of patients? (1 = no – 5 = mostly yes) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 18 (64.3%) | 10 (35.7%) |
| 5b N = 28 | How much has this changed since you began working with the ABC method? (1 = not at all – 5 = very much) | 0 (0.0%) | 2 (7.1%) | 6 (21.4%) | 14 (50.0%) | 6 (21.4%) |
| 6a N = 28 | Are you afraid of behavioural problems? (1 = never – 5 = always) | 16 (57.1%) | 6 (21.4%) | 5 (17.9%) | 1 (3.6%) | 0 (0.0%) |
| 6b N = 28 | How much has this changed since you began working with the ABC method? (1 = not at all – 5 = very much) | 2 (7.1%) | 3 (10.7%) | 7 (25.0%) | 13 (46.4%) | 3 (10.7%) |
| 7a N = 27 | Do you experience the social support of your colleagues when you have to deal with behavioural problems? (1 = always – 5 = never) | 11 (40.7%) | 11 (40.7%) | 2 (7.4%) | 3 (11.1%) | 0 (0.0%) |
| 7b N = 27 | How much has this changed since you began working with the ABC method? (1 = not at all – 5 = very much) | 2 (7.1%) | 2 (7.1%) | 6 (21.4%) | 15 (53.6%) | 3 (10.7%) |
| 8a N = 27 | Do you deal well with behavioural problems according to your colleagues? (1 = yes, always – 5 = no never) | 2 (7.4%) | 15 (55.6%) | 8 (29.6%) | 2 (7.4%) | 0 (0.0%) |
| 8b (N = 27) | How much has this changed since you began working with the ABC method? (1 = not at all – 5 = very much) | 0 (0.0%) | 5 (18.5%) | 13 (48.1%) | 6 (22.2%) | 3 (11.1%) |

Table 2 Perceived behavioural control, social support, social norm, feelings of fear, and the nurses’ self-reported changes since working with the ABC method.

(social norm). Most of the nurses reported they are rarely afraid of behavioural problems (78.5%, score ≤ 2) and 67.8% (score ≤ 2) reported it is not difficult to deal with behavioural problems on the ward (Table 2).

More than half of the nursing staff (percentages ranging from 57.1% to 71.4%) reported positive changes regarding their perceived control over the patient’s behaviour, their perceived control about how to deal with it, their confidence, and their degree of fear since working

with the ABC-method (score > 4). Nearly half of the nursing staff (46.5%) reported that the extent to which they find it difficult to deal with behavioural problems has positively changed since working with the ABC method (score ≥ 4). According to 33.3% of the nursing staff, the opinion of their colleagues about how they deal with behavioural problems has positively changed since working with the ABC method and 64.3% reported that the extent to which they experience the social support

of colleagues when they must deal with behavioural problems is positively changed since working with the ABC method (score ≥ 4) (Table 2).

NURSES' OPINIONS OF THE EFFECTIVENESS OF THE ABC METHOD

This question was completed by 28 nurses. Almost 90% of the nurses thought the ABC method helps to reduce behavioural problems (score ≥ 4 on this question).

DISCUSSION

The objective of this study was to study nurses' attitudes towards patients' problem behaviour, perceived control of behaviour, social support within the team, social norm of colleagues, feelings of fear and their perceived changes therein. In addition, we examined their opinions on the effectiveness of the ABC method to decrease behavioural problems.

Most nurses reported improvement in their perceived control over patients' behavioural problems, were more confident in the way they deal with the behavioural problems and experienced more support from colleagues since working with the ABC method. This is likely to be the direct result of the skills learnt in the ABC method. For example, the nurses learnt to observe behavioural problems well and to think about the possible antecedents and consequences by asking themselves several specific questions. Thinking about behavioural problems in this way is likely to make the nurses more aware of the potential antecedents of behavioural problems (Cohn, Smyer & Horgas, 1994). The early awareness of potential antecedents gives nurses more opportunities to think about early/preventive interventions which might have a positive effect on their perceived behavioural control. In addition, in the training they have learnt to reflect with colleagues on how their own behaviour influences the behaviour of patients. This might give nurses more insight into how colleagues work and help them to learn from each other and work more as a team. Another important question was whether more knowledge about behavioural problems and possible triggers due to the training and working with the ABC method might bring about a change in the nurses' attitude towards behavioural problems. Some nurses experienced changes in their attitude. However, with the data collected in this study it is not clear how the nurses' attitudes changed nor how this affected the behavioural problems of patients. This should be investigated in future studies.

Most of the nurses reported that in their opinion the ABC method helps to reduce behavioural problems at the department. This contrasts with the findings in our previous experimental study, where we could not show an actual decrease in aggressive behaviour at patient

level (Pouwels et al., 2019; Winkens et al., 2019). One possible explanation is that nurses may be enthusiastic about the ABC method and experience more control over the patients' behavioural problems. That could be a reason why they think that the method helps to reduce behavioural problems. However, in order to actually be effective at the level of the patients' behavioural problems, the ABC method has to be usual practise, that is, it must be applied consistently by everyone. An actual change in patient care is difficult to accomplish and is dependent on sufficient implementation of the method (Geerligts et al., 1998; Grol, 2001; Grol & Grimshaw, 2003; Leentjes & Burgers, 2007). Data of our previous experimental study show that the implementation of the ABC method was insufficient (Pouwels et al., 2019), which may explain why no effect on behavioural problems was found. There was no implementation plan, and factors like enough time to practise the ABC method, discussions with colleagues about the method and integration of the ABC method into digital reporting systems, which are all important for successful implementation (Geerligts et al., 2018), were not sufficiently arranged before the start of the training (Pouwels et al., 2019).

In future studies on the effect of the ABC method, more effort is required to ensure successful implementation, starting with an implementation plan based on the theory of change management before the method is introduced (Geerligts et al., 2018; Grol, 2001; Grol & Grimshaw, 2003; Leentjes & Burgers, 2007). A longitudinal study with specific focus on implementation, including measurement of the success of the implementation process, is currently being carried out by our research group.

This is the first study examining the impact of the ABC method on the nursing staff working with ABI patients. Multiple retrospective outcome measures were used. Although first findings are interesting, especially the disconnect between the perceptions of the nursing staff and the actual changes at the level of the behavioural problems since working with the ABC method (Pouwels et al., 2019), we must also underline that the absence of a baseline measurement is a shortcoming of the study. A longitudinal study with pre- and post-treatment measurements is needed to confirm the effects of the ABC method at the level of the nursing staff taking into account the actual effect of the ABC method on behavioural problems of patients with ABI.

In summary, most nurses working with the ABC method on a residential brain-injury ward reported having perceived behavioural control, having received social support, having few feelings of fear, and having confidence in the way they deal with behavioural problems. Moreover, nurses reported positive changes in all these topics since working with the ABC method, which might indicate that these changes were the result of the training and working with the ABC method.

DATA ACCESSIBILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, CP, upon reasonable request.

ACKNOWLEDGEMENTS

We would like to thank all of the trainers, patients and nurses of Department Ter Poorteweg of SVRZ 't Gasthuis, and Department S3 of Multidisciplinary Specialist Center for Brain Injury and Neuropsychiatry (Huize Padua) GGZ Oost Brabant, for their participation in this study. We would like to thank the Stichting ABC '99 for supplying the ABC training materials.

COMPETING INTERESTS

The authors have no competing interests to declare.

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TO CITE THIS ARTICLE:

Pouwels, C, Spauwen, P, van Heugten, C, Botteram, R, Winkens, I and Ponds, R. 2024. Dealing with Patients with Behavioural Problems After Acquired Brain Injury: Nurses' Experiences with the Antecedent Behaviour Consequence Method. *Journal of Long-Term Care*, (2024), pp. 54–61. DOI: <https://doi.org/10.31389/jltc.182>

Submitted: 16 October 2022 **Accepted:** 03 January 2024 **Published:** 09 February 2024

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