# Factors predicting first appointment attendance at a Traumatic Brain Injury clinical neuropsychology outpatient clinic: A logistic regression analysis


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## Abstract

**Background:** The purpose of our study was to investigate factors which predicted first appointment attendance within a traumatic brain injury (TBI) neuropsychology outpatient department.

**Materials and methods:** A newly introduced telephone triaging system was implemented in a clinical neuropsychology service for individuals with a TBI. The effects of receiving a triage telephone call, amongst other variables, were analysed as predictors of attendance at the first face-to-face clinic appointment. The data from 161 individuals were analysed using routine patient information collected by the clinical neuropsychology service. Logistic regression analyses were performed to investigate predictors of first appointment clinic attendance.

**Results:** Logistic regression analyses identified higher age, shorter waiting times, and answering the triage call as potential predictors of attendance, highlighting where the service might focus efforts to facilitate attendance.

**Conclusions:** Both patient and service factors were found to be significant predictors of patient attendance. Further service evaluation could explore patients' experiences of triage telephone calls, and investigate relationships between waiting times and neuropsychological outcomes.

## Introduction

Following traumatic brain injury (TBI), the most rapid neurological recovery occurs during the early weeks and months; therefore, early access to multidisciplinary neurological rehabilitation within this time period is crucial for providing the best opportunity for optimal recovery [1-3]. The UK's National Institute for Health and Care Excellence advises that all individuals who have acquired a brain injury should be referred for outpatient follow-up "with a professional trained in assessment and management of sequelae of brain injury" [4].

The British Psychological Society Division of Neuropsychology [5] has published guidance for commissioners on the clinical and economic benefits of neuropsychology assessment and interventions following TBI, which is supported by an expansive evidence base [6-10]. Importantly, early neuropsychological input can address unhelpful 'passive' coping strategies (such as avoidance), preventing them from becoming entrenched, which is associated with poorer psychosocial outcomes over time [11-12].

A literature search into attendance rates of outpatient appointments revealed that predictors of non-attendance have been examined across a range of settings including physician outpatients [13], physical therapy outpatients [14] and neurology outpatients [15]. Demographic variables including age and gender have been found to be associated with attendance [13-15]. In a study of initial appointment attendance at a specialist concussion clinic in New Zealand, younger individuals were more likely to miss their first appointment than older individuals [16]. In the same study, males were less likely to attend follow-up appointments in the longer term than females [16].

The distance a patient lives from the hospital has also been found to be associated with non-attendance. Sheridan et al. [17] investigated patient non-attendance within a cancer service in Leeds, United Kingdom. Researchers discovered that despite appointments being urgent (for suspected cancer); individuals living further away from the hospital site were less likely to attend. Mark et al. [18] also found that patients who lived further away from the hospital were significantly less likely to attend their neuropsychology outpatient follow-up appointments.

Kruse and Rohland [19] found that patients whose scheduled appointments within a psychiatric outpatient clinic were within two weeks of their hospital discharge were increasingly likely to attend their follow-up appointments compared with those patients who waited longer. Leung et al. [20] found longer waiting times to be a risk factor for non-attendance in a specialist outpatient clinic in Hong Kong. Mark et al. [18] replicated this finding during their study in a neuropsychology service in The Netherlands, also reporting that patients who had been referred for further medical treatment prior to a psychology appointment was also predictive of non-attendance at follow-up.

A recent study by Lam et al. [21] with general medicine patients emphasised the importance of arranging follow-up appointments during the discharge process, along with patients' familiarity with the care provider and some form of reminder, e.g. an appointment slip provided on discharge, as being important in reducing the number of appointments not attended.

While the above studies have looked at a range of healthcare services, a paucity of research exists into the reasons why people with a TBI might not attend services, with the World Health Organization Collaborating Centre Task Force on Mild TBI suggesting that those who do not attend follow-up are vastly under-represented in the literature [22]. An understanding of the factors predictive of attendance and non-attendance is of interest to help service providers offer a more accessible and efficient service.

Consequently, the aim of this service evaluation was to develop an understanding of which factors predicted attendance at first appointments for individuals with a TBI following the introduction of a new triage telephone call initiative. The service evaluation took place in a Clinical Neuropsychology service for people with TBI, which is part of a large NHS Clinical Neuropsychology department. The service introduced a telephone triaging initiative due to concerns about lengthy waiting times, high non-attendance rates and wanting to use clinical time as appropriately and efficiently as possible [23-24]. Triage calls were made within 18 weeks from the date of referral and took the form of a brief clinical telephone interview with a qualified clinical neuropsychologist to establish: how the client was managing since their TBI; whether neuropsychology input was clinically indicated; any risk issues indicating a need for the appointment to be expedited; and whether the client wanted and intended to attend an initial face-to-face appointment [23-24]. Three attempts were made to contact each client for a triaging call and if these attempts were unsuccessful, then the client was sent a first appointment as usual.

The research question for this service evaluation was: what factors predict attendance of the first appointment for individuals with a TBI?

## Method

### *Sample*

A total of 316 individuals were referred to a TBI service, based in a Clinical Neuropsychology department within a large NHS teaching hospital, over a 12 month period. Of the 316 individuals referred, 165 were offered an initial appointment (reasons for not being offered appointments are detailed elsewhere [23-24]). A further 4 individuals declined their appointments prior to attending, leaving 161 individuals whose data were included in this study. No individuals were excluded from the sample on the basis of demographic or clinical factors.

### *Design*

The independent variables for this study were selected based on the availability of the data, i.e. variables which were routinely recorded by the service, but also variables which have been analysed in other studies regarding patient attendance. These variables consisted of: age and gender of the patient; distance the patient lived from the hospital; profession of referrer; whether the referral was expedited as urgent (either at initial referral, or following the triage phone call), waiting time, and TBI severity (rated informally by the triaging clinician based on referral content, including length of post-traumatic amnesia [25] where available). A series of binomial logistic regressions were

used to identify the predictors which distinguished between individuals who did and did not attend their first appointments (dependant variable).

### *Ethical considerations*

Direct contact between participants and researchers was not required, since only data collected by the service as part of routine care were used. The Trust Research and Development team confirmed that it was acceptable to use the data in this way for the purpose of conducting a service evaluation and provided access to relevant systems. Ethical approval from a host University's Faculty of Health and Medicine Research Ethics Committee (FHMREC) was also granted.

### *Procedure*

Data regarding triage calls were collated in a clinical database to monitor call outcomes (including whether calls were answered, whether appointments were expedited and first appointment attendance); these data were collected for the data analysis. Additional demographic information was gathered from the electronic patient records.

### *Analysis*

Since the dependent variable (attended or did not attend) was dichotomous, mutually exclusive and exhaustive, the data met the basic assumptions for logistic regression to be used [26]. However, logistic regression also requires that a linear relationship exists between the continuous independent variables and the logit transformation of the dependent variable [27]. Since the distribution of the waiting time data was bimodal (due to some appointments being expedited), this variable was excluded from the initial analyses. However, whether appointments were expedited was included as a categorical variable. An additional analysis was conducted on the data for only those individuals whose appointments were not expedited, so that the waiting time data could be included, as detailed further in the results section.

#### *Whole group analysis*

A binomial logistic regression with backward stepwise elimination was conducted on the data from the whole group (n=161), following the procedure outlined by Howitt and Cramer [26]. The dependent variable (whether the first appointment was attended or not) was binary coded. The continuous independent variables entered into the model were age (in years) and distance lived from the service (in miles, 'as the crow flies'). The categorical independent variables were gender (two levels: male and female), referrer (four levels: GP, consultant/medic, neurorehabilitation therapist and primary/secondary-care psychologist) and whether the referral was expedited (three levels: no, yes - at time of referral and yes - at time of triage call).

#### *TBI severity*

A potential predictor variable which could not be included in the above regression model was TBI severity, as rated by the triaging clinician. This was due to a large amount of missing data for this variable (missing for 18% of participants). A separate

binomial logistic regression analysis was therefore conducted (n=132) with patients with missing data removed.

*Call outcomes*

The data from individuals for whom both a triage call was attempted and an appointment was offered (n=88) were analysed (reasons for not attempting a triage call included: appointment expedited at time of referral; no telephone contact details available; and clinical judgement that a triage call was not appropriate).

*Non-expedited cases*

The data from all individuals whose appointments were expedited (at any stage) were removed from the dataset. This meant that the effects of waiting time could be examined without the complicating effects of the bimodal distribution. A binomial logistic regression with backwards elimination was conducted on this dataset (n=103). Waiting time (in weeks) was entered as a continuous independent variable, along with age. All other variables were excluded either due to their lack of relevance (whether appointments were expedited) or their lack of significance in the previous models.

## Results

### *Sample characteristics*

The majority of participants were male (84%, n=135). Participants' ages (at time of first appointment) ranged from 16 to 91 years, with a mean age of 40.

Of the participants for whom TBI severity had been rated (n=133), 28% were given a "mild" rating, 61% a "moderate" rating and 11% a "severe" rating.

### *Waiting list data*

Fifty-eight referrals (36%) were expedited either at the point of referral or as an outcome of the triage calls. The main reasons for expedition were risk-related. The waiting times for expedited appointments ranged from 0 to 36 weeks, with a median waiting time of 9 weeks. The waiting times for non-expedited appointments ranged from 13 to 54 weeks, with a median waiting time of 45 weeks. Further analysis of the waiting list data can be found elsewhere [23-24].

### *Whole group analysis*

Although the backward elimination steps did not significantly improve the fit of the model, Field [27] recommends that one should aim for parsimony when building logistic regression models. As such, the fourth iteration (with fewest variables) was selected as the final model. This revealed two significant predictors of attendance at first appointments: age (Wald=4.02, df=1, $p<.05$) and whether the appointment was expedited (Wald=18.38, df=2, $p<.01$). The odds ratios indicated that higher age was associated with an increased likelihood of attending (OR=1.02, CI=1.00-1.05), whilst not being expedited was associated with a decreased likelihood of attending compared

to being expedited at the time of the triage call (OR=0.09, CI=0.01-0.70). Gender, referrer and distance lived from the service were not found to be significantly associated with the odds of attending the first appointment. The chi-square statistic for the model was highly significant ($X^2$(3, n=161) =27.59, $p$<.01), suggesting an improvement over the baseline model (i.e. before any variables were entered). Further, the Hosmer and Lemeshow Test was non-significant ($X^2$(8, n=161) =6.60, $p$=.58), suggesting that the model was a good fit for the data (although it is noted that this test has low power when used on smaller samples, making it unlikely to detect subtle deviations from the model). However, the pseudo-R-square value for the model was low (Nagelkerke $R^2$ =.22), suggesting that although the contribution of these variables to predicting attendance was significant, the overall model was only capable of predicting approximately 22% of the variation in the outcome. The classification data suggested that the model predicted attendance with 81.9% accuracy. The key results are presented in Table 1.

**TABLE 1 HERE**

### *TBI severity*

A further binomial logistic regression was conducted, using the same backward stepwise procedure as above but with one additional categorical variable: severity of TBI (three levels: mild, moderate and severe). However, the sample size for this analysis (n=132) was not great enough to sufficiently minimise the chance of type-II error. As such, the findings must be interpreted cautiously. In brief, the model identified one significant predictor of attendance at first appointment: whether the appointment was expedited (Wald=12.77, df=2, $p$<.01). Not being expedited was associated with a decreased likelihood of attending compared to being expedited following the triage call (OR=0.07, CI=0.01-0.59). Having a TBI rated as “mild” was close to achieving statistical significance as a negative predictor of attendance (Wald=3.75, df=1, $p$=0.05), i.e. having a severity rating of “mild” was associated (albeit not significantly) with a decreased likelihood of attending compared to a rating of “severe” (OR=0.23, CI=0.05-1.02). Age was not identified as a significant predictor in this model, possibly due to error introduced by the small sample size and the associated lack of statistical power to identify predictors.

### *Triage telephone call outcomes*

Of those individuals for whom a triage call was attempted but not answered after three attempts (n=51), almost half (47%) did not attend when offered a face-to-face appointment (by letter). An initial two-tailed chi-square test of association indicated that individuals who answered the call and were subsequently offered an appointment were significantly more likely to attend their first appointment than individuals who did not answer the call ($X^2$(1, n=88) =6.00, $p$<.05). A medium effect size (Cohen, 1988) was indicated (Cramer’s V=.26). A binomial logistic regression was then conducted on this dataset. The independent variables entered were age (since this was a significant predictor in the first regression analysis) and the new categorical variable: whether the call was answered. This variable was categorised by outcome of the call, such that it

had three levels: call not answered, call answered (remained on the waiting list), and call answered (offered an expedited appointment). The previously identified predictor of whether the appointment was expedited was incorporated here, in an attempt to avoid the overlap which may have occurred if they were entered as separate variables. Severity was not included as an independent variable due to the impact of the missing data on the (already fairly small, n=88) sample size. Only one step (i.e. entering the variables) was required – the backward elimination method did not identify any variables to be removed. The model identified call outcome as a significant predictor of attendance (Wald=6.94, df=2, $p$<.05). The odds ratio suggested that not answering the call was associated with a decreased likelihood of attending (OR=.09, CI=.01-.76). Age achieved a Wald value which was almost significant, suggesting that it might also be a predictor of attendance (Wald=3.81, df=1, $p$=.05), though this cannot be concluded. The odds ratio suggested that higher age was associated with an increased chance of attending (OR=1.03, CI=1.00-1.06).

The chi-square statistic for this model was highly significant ($X^2$(3, n=88) =15.00, $p$<.01), indicating an improvement over the baseline model. The Hosmer and Lemeshow test was non-significant ($X^2$(8, n=88) =5.49, $p$=.70), suggesting that the model was a good fit for the data (although this may not be reliable for such a small sample). The pseudo-R-square value for the model was low (Nagelkerke $R^2$ =.21), suggesting that the model could predict around 21% of the variation in the outcome. The classification data suggested that the model predicted attendance with 82.1% accuracy.

### *Non-expedited cases*

A binomial logistic regression with backwards elimination was conducted on this dataset (n=103). The second and final step found waiting time to be a significant predictor of attendance (Wald=4.20, df=1, p<.05), in that a shorter waiting time was indicative of an increased likelihood of attendance (OR=0.98, CI=0.90-1.00). Age was not identified as a significant predictor. The chi-square statistic for the model was significant ($X^2$(1, n=103) =4.87, $p$<.05) and the Hosmer and Lemeshow Test was non-significant ($X^2$(8, n=103) =13, $p$=.11), suggesting that the model was an improvement upon the baseline model, and an acceptable fit to the data. The pseudo-R-square value was very low (Nagelkerke $R^2$ =.06), indicating that the model was only able to predict around 6% of the variation in the outcome. The accuracy of the model for predicting attendance was only slightly more than chance, at 57.4%.

## Discussion

In this service evaluation, we sought to investigate factors which might predict first appointment attendance for outpatient clinical neuropsychology follow-up following TBI. Since telephone triaging did not appear to reduce the service's DNA ('did not attend') rate (despite the positive effects on waiting times and clinic slot utilisation) [23-24], it was important to consider which factors made attendance more or less likely, in order for the service to address this. Younger age; being placed on a waiting list as opposed to appointment being expedited; a longer waiting time; and not answering the telephone triage call, all had significant implications for attendance rates.

Younger age has been found to be associated with non-attendance in concussion [16], mental health [28], forensic [29] and primary care [30] services, and it appears likely that this is also true for the clinical neuropsychology TBI service. Parikh et al [13] discussed possible explanations for the age differences found in attendance rates being due to older adults having more time in their daily schedules to attend appointments, and a greater awareness of their own healthcare needs.

Being placed on the waiting list (rather than receiving an expedited appointment) and having a longer waiting time (for those placed on the waiting list) were both found to be associated with a reduced likelihood of attendance, suggesting that appointments occurring closer to the time of referral were more likely to be attended. This is consistent with findings in mental health services [13, 31].

Individuals who answered the triage call and agreed to attend an appointment were more likely to attend. It may be that the calls served as a prompt, as has been found to improve attendance in community mental health settings [32]. A series of literature reviews by McLean et al. [33] found that appointment reminders with an enhanced level of information (beyond date, time and location), and positive interactions between services and clients, both increased the likelihood of healthcare appointment attendance. The triage calls were an opportunity to build positive relationships, discuss what the service could offer and provide additional information about the first appointment. This might somewhat explain the finding that answering the triage call was a predictor of attendance. This finding might also suggest demographic or clinical differences between individuals who did and did not answer the calls. It is possible that those who did not answer were more engaged in employment or other activity, or that they were individuals with reduced ability or less desire to communicate on the telephone. Another hypothesis may be that those who did not answer may be leading more chaotic lifestyles, potentially as a result of their TBI, and may not have a mobile phone, or may frequently change their number or lose their mobile phones, leaving them uncontactable.

Having a TBI severity rating of “mild” was found to approach (though not achieve) statistical significance as a predictor of attendance, compared to a rating of “severe”. TBI severity ratings were allocated informally by the clinicians rather than rigorous decision criteria, limiting comparability and reproducibility of this finding.

Given that the service evaluation only allowed for the use of routinely collected data, it is likely that some important potential predictor variables were not considered, such as employment status and transportation difficulties [34].

### *Implications*

This project has generated some useful information for the service regarding the benefits of telephone triaging, and predictors of patient attendance. A key finding was that shorter waiting times were predictive of appointment attendance. This suggests that the triaging intervention is worthwhile continuing, with the aim of further reducing waiting times and therefore facilitating improved attendance rates.

Additionally, it may be useful to increase attempts to target contacting younger individuals and those who have spent longer on the waiting list, to facilitate attendance in these groups. However, it is important for the service to consider issues of choice

and consent if considering more assertive or persistent outreach attempts [35]. The finding that individuals who answered triage telephone calls were more likely to attend their appointments might suggest positive qualities relating to the process and/or content of the calls, possibly including the provision of enhanced information about appointments and creating a sense of collaboration and engagement [33]. Making the triage calls outside of normal working hours (09.00-17.00) might increase the likelihood of the calls being answered [33] which could in turn increase the likelihood of attendance.

It may be useful to explore clients' experiences of the triaging calls through qualitative service evaluation, by asking for feedback on process and content from individuals who answered the calls. This could allow for adaptations to the call format, in line with client recommendations. Additionally, the service could monitor neuropsychological outcomes (for example, mood, quality of life, cognitive abilities) over time and investigate whether outcomes correlate with waiting times which if found, would give further evidence for the benefits of telephone triaging.

In light of the current COVID-19 social distancing measures, the neuropsychology TBI outpatient department has stopped face-to-face clinics for the time being, and appointments are presently being conducted remotely from home environments via telephone and video calls. Using available clinic slots usually used for neuropsychological testing during this period, a new initiative is being trialled, with trainee and assistant psychologists conducting triage phone calls, under supervision, as a stepped-care model trial. Moving forwards and learning from these changes in ways of working, it is likely that the service will offer patients the choice of telephone, video-call or face-to-face appointments going forward, with early anecdotal evidence suggesting improved attendance rates for remote appointments.

### *Conclusions*

The analyses found that younger age; being placed on a waiting list (as opposed to the appointment being expedited); a longer waiting time (for those placed on the waiting list); and not answering the initial telephone triage call, were all significant negative predictors of clinic attendance rates.

The service has increased the number of clinicians completing telephone triage calls in order to contact patients in a timelier manner following their discharge from hospital, both to improve the clinical service offered, and to improve subsequent appointment attendance rates. COVID-19 has had a great impact on ways of working, and is likely to change service models in the future, making more use of remote formats to increase accessibility and attendance of the service.


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## Declaration of interest statement

No potential competing interest was reported by the authors.

## References


[1] Greenwood R. Acute rehabilitation after severe head injury. British Journal of Neurosurgery. 2004;18(6):573–575

[2] León-Carrión J, Machuca-Murga F, Solís-Marcos, I, et al. The sooner patients begin neurorehabilitation, the better their functional outcome. Brain Injury. 2013;27(10):1119–1123.

[3] Thompson J, Majumdar J, Sheldrick R et al. Acute neurorehabilitation versus treatment as usual. British Journal of Neurosurgery. 2012;27(1):24–29

[4] National Institute for Health and Care Excellence. Head injury: Assessment and early management. 2014.

[5] Division of Neuropsychology. Clinical neuropsychology services – Delivering value for the NHS: A briefing paper for NHS commissioners and policy makers. Leicester: British Psychological Society. 2015.

[6] Cicerone KD, Langenbahn DM, Braden C. Evidence-based cognitive rehabilitation: Updated review of the literature from 2003 through 2008. Archives of Physical Medicine and Rehabilitation. 2011;92(4):519–530

[7] Ponsford J, Lee N, Wong D. et al. Efficacy of motivational interviewing and cognitive behavioural therapy for anxiety and depression symptoms following traumatic brain injury. Psychological Medicine. 2016;46(5):1079–1090

[8] Rabinowitz AR, Levin HS. Cognitive sequelae of traumatic brain injury. Psychiatric Clinics of North America. 2014;37(1):1-11

[9] Yeates G, Edwards A, Murray C. et al. The use of emotionally-focused couples therapy (EFT) for survivors of acquired brain injury with social cognition and executive functioning impairments, and their partners: A case series analysis. Neuro-Disability and Psychotherapy. 2013;1(2):151–197

[10] Ulrichsen K, Kaufmann T, Dorum E. et al. Clinical utility of mindfulness training in the treatment of fatigue after stroke, traumatic brain injury and multiple sclerosis: A systematic literature review and meta-analysis. Frontiers in Psychology. 2016;7:912

[11] Anson K, Ponsford J. Coping and emotional adjustment following traumatic brain Injury. Journal of Head Trauma Rehabilitation. 2006;21(3):248–259

[12] Wolters G, Stapert S, Brands I. et al. Coping following acquired brain injury: Predictors and correlates. Journal of Head Trauma Rehabilitation. 2011;26(2):150–157

[13] Parikh A, Gupta K., Wilson AC et al. The effectiveness of outpatient appointment reminder systems in reducing no-show rates. The American journal of medicine. 2010;123(6):542-548

[14] Taylor NF, Bottrell J, Lawler K, et al. Mobile telephone short message service reminders can reduce nonattendance in physical therapy outpatient clinics: a randomized controlled trial. Archives of physical medicine and rehabilitation, 2012;93(1):21-26

[15] Faiz KW, Kristoffersen ES. Association between age and outpatient clinic arrival time: myth or reality?. BMC Health Serv Res. 2018;18:235

[16] Snell D, Surgenor L. An analysis of referees and referrals to a specialist concussion clinic in New Zealand. N Z Med J. 2006;119:1231

[17] Sheridan R, Oliver SE, Hall G, et al. Patient non-attendance at urgent referral appointments for suspected cancer and its links to cancer diagnosis and one year mortality: a cohort study of patients referred on the two week wait pathway. Cancer Epidemiology. 2019;63:101588

[18] Mark RE, Klarenbeek PL, Rutten GJM et al. Why Don't Neurosurgery Patients Return for Neuropsychological Follow-Up? Predictors for Voluntary Appointment Keeping and Reasons for Cancellation. The Clinical Neuropsychologist. 2014;28:1:49-64

[19] Kruse GR, Rohland BM, Wu X. Factors associated with missed first appointments at a psychiatric clinic. Psychiatric Services. 2002;53(9):1173-1176

[20] Leung GM, Castan-Cameo S, McGhee SM, et al. Waiting time, doctor shopping, and nonattendance at specialist outpatient clinics: case-control study of 6495 individuals in Hong Kong. Med Care. 2003;41(11):1293-1300

[21] Lam K, Abrams HB, Matelski J et al. Factors associated with attendance at primary care appointments after discharge from hospital: a retrospective cohort study. CMAJ open. 2018;6(4):E587

[22] Carroll L, Cassidy J, Holm L et al. Methodological issues and research recommendations for mild traumatic brain injury: The WHO Collaborating Centre Task Force on Mild Traumatic Brain Injury. Journal of Rehabilitation Medicine. 2004;36(43 Suppl):113-25

[23] King L, Sowter N, Malone C. Preliminary results of a telephone triage system for a clinical neuropsychology service for Traumatic Brain Injury patients. The Neuropsychologist. 2017;3:54–57

[24] Sowter N, King L, Eccles F. An evaluation of a telephone triaging system for traumatic brain injury referrals. The Neuropsychologist, 2019;8

[25] Parente R. Posttraumatic Amnesia. In: Kreutzer JS, DeLuca J, Caplan B (eds) Encyclopedia of Clinical Neuropsychology. 2011; Springer, New York, NY

[26] Howitt D, Cramer D. Introduction to SPSS statistics in psychology: For version 19 and earlier (5th ed.). New York: Prentice Hall; 2011

[27] Field A. Discovering statistics using IBM SPSS statistics (Fifth ed.). London: Sage; 2018

[28] Adeponle AB, Obembe AO, Suleiman GT, et al. Missed first appointments: Prevalence and associated factors in first-time attendees at an outpatient psychiatric clinic in Nigeria. Mental Health, Religion and Culture. 2007;10(6):609-620

[29] Daniels MK, Jung S. Missed initial appointments at an outpatient forensic psychiatric clinic. The Journal of Forensic Psychiatry & Psychology. 2009;20(6):964-973

[30] Giunta D, Briatore A, Baum A, et al. Factors associated with nonattendance at clinical medicine scheduled outpatient appointments in a university general hospital. Patient Preference and Adherence. 2013;7:1163

[31] Gallucci G, Swartz W, Hackerman F. Impact of the wait for an initial appointment on the rate of kept appointments at a mental health center. Psychiatric Services. 2005;56(3):344-346

[32] MacDonald J, Brown N, Ellis P. Using telephone prompts to improve initial attendance at a community mental health center. Psychiatric Services. 2000;51(6):812-814

[33] McLean S, Gee M, Booth A, et al. Targeting the Use of Reminders and Notifications for Uptake by Populations (TURNUP): a systematic review and evidence synthesis. Health Services and Delivery Research. 2014;2(34)

[34] Paterson B, Charlton P, Richard, S. Non-attendance in chronic disease clinics: a matter of non-compliance? Journal of Nursing and Healthcare of Chronic Illness. 2010;2:63-74

[35] Carey T, Spratt M. When is enough enough? Structuring the organization of treatment to maximize patient choice and control. The Cognitive Behaviour Therapist. 2009;2(3):211-226

## Tables

Table 1

*Logistic Regression - Whole Group Analysis (Step 4)*

| Variable | B | S.E. | Wald | df | Sig. | Exp(B) | 95% Confidence interval for Exp(B) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Lower | Upper |
| Age | .024 | .012 | 4.016 | 1 | .045 | 1.024 | 1.001 | 1.049 |
| Expedited | -2.434 | 1.058 | 5.296 | 1 | .021 | .088 | .011 | .697 |
| Constant | 1.555 | 1.163 | 1.789 | 1 | .181 | 4.737 | | |