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Who seeks ICBT for depression and how do they get there? Effects of recruitment source on patient demographics and clinical characteristics

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ABSTRACT

Studies on internet-administered cognitive behavior therapy (ICBT) frequently use several different sources of recruitment, yet no study has investigated whether different recruitment sources produce different clinical and demographic profiles among participants. Using data from a large sample (n = 982) seeking ICBT for depression, we compared these characteristics on the basis of self-reported recruitment source. Recruitment sources that imply more active treatment-seeking behaviors (Google searches, viewing postings on mental health websites) presented more severe depression and anxiety than those recruited through more passive sources of information (newspaper advertisements, referrals by friends and family). In addition, a number of demographic differences between groups were found. These findings have important implications for ICBT research projects and clinical programs who employ open recruitment procedures and multi-modal recruitment strategies, and who wish to recruit representative samples or target specific subgroups. Replications in other countries will however be required to establish cross-cultural patterns.

1. Introduction

More than a decade of research has shown internet-delivered self-help based on cognitive behavior therapy (ICBT; Andersson, 2014, 2009) to be an efficacious treatment of depression (Richards and Richardson, 2012; Titov, 2011), anxiety disorders (Andersson et al., 2013) and somatic conditions (Cuijpers et al., 2008). More recently, the effectiveness of ICBT when implemented in routine psychiatric care has also been demonstrated (Andersson and Hedman, 2013).

Participants and patients are often recruited to ICBT studies and clinical programs using several parallel recruitment mediums, such as advertisements in TV, radio, newspaper and social media, paid Google search results, and referrals by clinics (e.g., Lindner et al., 2013b; van der Zanden et al., 2011). Using several recruitment channels is presumed to increase the number of potential participants exposed to recruitment efforts, thereby potentially increasing enrollment numbers and recruiting a more heterogeneous sample, yet the effect on sample characteristics of this strategy is largely unknown. Although subject to regional variations and changes over time, media consumption behaviors often differ according to demographic variables. Internet usage in the US, for example, is more prevalent in lower age groups and among those with higher socioeconomic status (Pew Research Center Internet Project Survey, 2014). Certain demographic variables are in turn associated with the presentation of psychiatric disorders. Low socioeconomic status, for example, has been consistently associated with higher odds of being depressed (Lorant et al., 2003). Avoiding the pitfalls of the ecological fallacy, direct correlations between specific media usages and psychiatric disorders have also been demonstrated, e.g., between depression and computer usage, panic disorder and television watching (de Wit et al., 2011).

All considered, it is reasonable to hypothesize that recruitment efforts through different media will attract clients and participants with different characteristics. While previous ICBT research has investigated characteristics of participants in ICBT (Titov et al., 2010) and the recruitment and cost effectiveness of individual recruitment sources such as Facebook (Ramo et al., 2014; Ünlü Ince et al., 2014), Google Ads (Gross et al., 2014) and the prevalence recruitment strategy (Woodford et al., 2011), no past study has compared clinical and demographic characteristics of participants recruited from different sources to an ICBT study. Knowledge of such potential effects could prove valuable for studies trying to avoid sampling bias and when the aim is to recruit a representative sample with high external validity; or alternatively, if the recruitment target is a specific clinical or demographic subgroup. In the current study, we used a large dataset (n = 982) of

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Fig. 1. Newspaper advertisement. Translation from Swedish: *Feeling down? We are recruiting participants for a study on a new internet-based self-help program. Everything is online and free of charge. Open now! Apply and find more information at www.actua.se.*

screening information from an ICBT study for depression to investigate whether participants' clinical and demographic characteristics differed depending on recruitment source.

2. Methods

This study is part of the *Actua* intervention trial (Carlbring et al., 2013), pre-registered in the Clinicaltrials.gov registry (NCT01619930) and approved by the Regional Ethical Board in Umeå, Sweden.

2.1. Participants

Participants were 982 people who provided complete data in the online screening for a free ICBT trial for depression (http://www.actua.se). At the end of the screening, participants were asked how they found the study and answered the question using free-text answers. In a first stage, free-text answers were categorized into 14 groups by a single researcher (PL) according to a consensus-derived classification scheme. Participants mentioning several recruitment sources were categorized according to their deemed first and primary path. The "Do not recall or unspecific answer" group was excluded at this stage and from subsequent analyses since comparisons with this group were not considered meaningful, leaving 13 initial recruitment groups. See Table 1 for details and examples of recruitment source classifications.

In order to avoid statistical effects of many small and unequally-sized groups, the remaining 13 recruitment groups were collapsed into six groups: those recruited through Google (n = 197), Google searches (n = 160), Clinical settings (n = 130), Newspaper advertisements and articles (n = 280), Social referrals (n = 110), and Other passive exposures[1] (n = 70). See Table 1 for details. This group collapsing procedure was based solely on similarities of behaviors associated with each recruitment path, in order to make results interpretable and clinically meaningful. Viz. no consideration was taken to clinical or demographic characteristics in collapsing groups. Since it was not feasible to obtain data on number of potential participants exposed to each recruitment source, it was not possible to calculate the recruitment effectiveness and cost effectiveness of each source.

[1] The other collapsed recruitment groups considered passive were the Newspaper and Social referral groups (see Discussion section).

2.2. Measures

Clinical characteristics were collected using the Montgomery-Åsberg Depression Rating Scale self-rated (MADRS) (Svanborg and Åsberg, 1994), the nine-item Patient Health Questionnaire (PHQ-9) (Kroenke et al., 2001), the seven-item Generalized Anxiety Disorder (GAD-7) scale (Spitzer et al., 2006) and the Quality of Life Inventory (QOLI) (Frisch et al., 1992). These questionnaires have been previously validated for internet-administration (Carlbring et al., 2007; Dear et al., 2011; Hedman et al., 2010; Holländare et al., 2010; Lindner et al., 2013a) with there being no effect of administration format (one page per item or all items on one page) (Thorndike et al., 2009). Questions on demographic characteristics and treatment history were also included. The International Physical Activity Questionnaire (Craig et al., 2003) was used to assess physical activity, with each participant being classified according to standard scoring procedure to have a low, moderate, or high activity level. All items in the screening battery were mandatory. Drop-out during the screening process resulted in some missing data, yet since this loss was small (at most, n = 52, 5.3%), missing data was handled by case- and calculation-wise omission.

2.3. Procedure

Data for the current study was collected 2013-01-15 to 2014-02-09 using the online platform previously described. Only screening data was included.

2.4. Statistical analyses

Groups were compared using ANOVAs (scale-level data) and Fisher's exact tests (categorical data; 100,000 Monte Carlo simulations at 99% confidence interval used instead of exact tests due to computational constraints). For post-hoc investigations on scale-level data, pair-wise F tests were calculated, Bonferroni-correcting for the $(6 * 6 - 6) / 2$ possible pair-wise tests. On categorical data, to test whether any overall group effect was driven by a single group with deviating proportions, post-hoc pair-wise Chi-square tests were conducted on each group versus the rest combined (Bonferroni-correcting).

3. Results

3.1. Demographics and treatment histories

Full results are presented in Table 2. The *Newspaper* group was significantly older than all groups. The *Social* group had a higher percentage of singles. Several additional overall group differences appeared to be largely driven by disproportions in a single group, yet did not reach significance: The *Other passive exposure* group had a high percentage of PhDs, the *Clinical setting* group had a high percentage of participants currently on sick-leave and who reported past or current psychoactive medication.

3.2. Clinical characteristics

Group-wise scores on the PHQ-9, MADRS-S, GAD-7 and QOLI are presented in Table 3. The *Newspaper* group stood out by being less depressed, less anxious, and rating higher quality of life as compared to both the *Google* group and the *Clinical setting* group. Further, the *Google* group rated higher levels of anxiety compared to several groups, including the *Google search* group.

4. Discussion

We report for the first time that different recruitment sources are associated with somewhat different clinical and demographic profiles. Our findings suggest that recruiting participants through newspaper