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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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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.

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

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 exposures1 (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.

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) (Kroenke et al., 1999). 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
advertisements may be a suitable option to reach older participants (mean age of group was 50 years) with relatively low levels of depression, anxiety, and reductions in quality of life. Interestingly, those recruited via a clinical route presented similar depression and anxiety levels as those recruited through Google. This suggests that using the internet serves as a treatment-seeking behavior among depressed individuals. For ICBT studies and clinical programs aimed at more severely affected patients, recruitment through already established clinical relations. These findings have important implications for ICBT research projects and (when applicable) clinical practices that employ open recruitment procedures and multi-modal recruitment strategies to either target specific subgroups or recruit samples representative of the general population. Additionally, our findings may be applicable also to related fields, such as behavioral medicine (e.g., sleep disorders, irritable bowel syndrome, tinnitus).

Table 1

<table>
<thead>
<tr>
<th>Original groups (n)</th>
<th>Details and examples</th>
<th>Collapsed group (total n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google (n = 197)</td>
<td>Free-text answers that mentioned “Google ad”, simply “Google”, or made explicit referrals to Google-marked banners on websites. Paid-for search terms attached as Supplementary material.</td>
<td>1. Google (n = 197)</td>
</tr>
<tr>
<td>Google search (n = 160)</td>
<td>Free-text answers that explicitly mentioned an active search act, e.g., “I googled for depression”. Paid-for search terms attached as Supplementary material.</td>
<td>2. Google search (n = 160)</td>
</tr>
<tr>
<td>Via <a href="http://www.studie.nu">www.studie.nu</a> (n = 57)</td>
<td><a href="http://www.studie.nu">www.studie.nu</a> is a national Swedish website advertising on-going and future psychotherapy studies with open recruitment. Potential participants may sign-up for alerts when future studies are recruiting.</td>
<td>3. Clinical setting (n = 130)</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Mean age (SD)</td>
<td>41.09</td>
<td>(14.54)</td>
<td>40.26 (13.46)</td>
<td>38.53 (12.00)</td>
<td>36.34 (12.30)</td>
<td>50.12 (13.20)</td>
<td>F[5, 929] = 26.88, p &lt; .001</td>
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<tr>
<td>Sex</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Fisher's exact test p = .016</td>
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<tr>
<td>% male</td>
<td>23.5%</td>
<td>20.3%</td>
<td>20.9%</td>
<td>31.5%</td>
<td>33.1%</td>
<td>29.4%</td>
<td></td>
</tr>
<tr>
<td>% female</td>
<td>76.5%</td>
<td>79.7%</td>
<td>79.1%</td>
<td>68.5%</td>
<td>66.9%</td>
<td>70.6%</td>
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</tr>
<tr>
<td>Highest completed education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fisher's exact test p = .002</td>
</tr>
<tr>
<td>% primary</td>
<td>7.7%</td>
<td>6.3%</td>
<td>9.3%</td>
<td>11.1%</td>
<td>3.3%</td>
<td>4.4%</td>
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<tr>
<td>% secondary</td>
<td>41.8%</td>
<td>41.8%</td>
<td>31.0%</td>
<td>39.8%</td>
<td>30.9%</td>
<td>36.8%</td>
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<tr>
<td>% tertiary</td>
<td>49.5%</td>
<td>50.6%</td>
<td>56.6%</td>
<td>47.2%</td>
<td>62.2%</td>
<td>50.0%</td>
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<tr>
<td>% PhD</td>
<td>1.0%</td>
<td>1.3%</td>
<td>3.1%</td>
<td>1.9%</td>
<td>3.6%</td>
<td>8.8%</td>
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</tr>
<tr>
<td>Marital status</td>
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<td></td>
<td></td>
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<td></td>
<td>Fisher's exact test p &lt; .001</td>
</tr>
<tr>
<td>% single</td>
<td>29.1%</td>
<td>25.3%</td>
<td>32.6%</td>
<td>51.9%*</td>
<td>22.2%</td>
<td>22.1%</td>
<td></td>
</tr>
<tr>
<td>% married or in committed relationship</td>
<td>59.7%</td>
<td>63.9%</td>
<td>62.0%</td>
<td>42.6%</td>
<td>65.8%</td>
<td>66.2%</td>
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<tr>
<td>% divorced or widow(er)</td>
<td>10.7%</td>
<td>10.8%</td>
<td>5.4%</td>
<td>5.6%</td>
<td>12.0%</td>
<td>10.3%</td>
<td></td>
</tr>
<tr>
<td>% other</td>
<td>0.5%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.5%</td>
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</tr>
<tr>
<td>Past or current medication for psychiatric illness</td>
<td>51.0%</td>
<td>45.6%</td>
<td>64.3%</td>
<td>44.9%</td>
<td>45.6%</td>
<td>50.0%</td>
<td>Fisher's exact test p = .009</td>
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<tr>
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<td>54.4%</td>
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<td>55.1%</td>
<td>54.4%</td>
<td>50.0%</td>
<td></td>
</tr>
<tr>
<td>Past or current psychological treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fisher's exact test p = .097</td>
</tr>
<tr>
<td>% yes</td>
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<td>58.2%</td>
<td>67.4%</td>
<td>65.4%</td>
<td>56.3%</td>
<td>67.6%</td>
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<tr>
<td>% no</td>
<td>44.4%</td>
<td>41.8%</td>
<td>32.6%</td>
<td>34.6%</td>
<td>43.8%</td>
<td>32.4%</td>
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<tr>
<td>Currently on sick-leave</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Fisher's exact test p = .008</td>
</tr>
<tr>
<td>% yes</td>
<td>14.8%</td>
<td>6.3%</td>
<td>19.4%</td>
<td>11.2%</td>
<td>8.8%</td>
<td>10.3%</td>
<td></td>
</tr>
<tr>
<td>% no</td>
<td>85.2%</td>
<td>93.7%</td>
<td>80.6%</td>
<td>88.8%</td>
<td>91.2%</td>
<td>89.7%</td>
<td></td>
</tr>
<tr>
<td>Physical activity level</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Fisher's exact test p = .085</td>
</tr>
<tr>
<td>% low</td>
<td>36.5%</td>
<td>48.1%</td>
<td>41.5%</td>
<td>38.2%</td>
<td>32.1%</td>
<td>35.7%</td>
<td></td>
</tr>
<tr>
<td>% moderate</td>
<td>40.6%</td>
<td>32.5%</td>
<td>35.4%</td>
<td>43.6%</td>
<td>46.4%</td>
<td>48.6%</td>
<td></td>
</tr>
<tr>
<td>% high</td>
<td>22.8%</td>
<td>19.4%</td>
<td>23.1%</td>
<td>18.2%</td>
<td>21.4%</td>
<td>15.7%</td>
<td></td>
</tr>
</tbody>
</table>

Post-hoc differences refer to significant (Bonferroni-corrected) pairwise comparisons.

1 Borderline significant at p < .1.

* Overall group effect driven by a single group.
Although all mentioned differences were small in terms of absolute score differences, this was a clinical sample of individuals seeking treatment for depression and thus, mean scores near or above clinical cut-offs were expected. Our results are in agreement with preliminary findings of associations between specific media usages and different psychiatric disorders (de Wit et al., 2011). In our study, those who were recruited through newspaper advertisements were less depressed than those recruited through Google or a clinical setting (most of whom came from a website dedicated to clinical psychology, medicine or mental well-being), but not compared to those recruited via friends or family or those recruited through other passive exposure settings (e.g., posters on advertisement boards). In contrast to actively using Google to search for depression-related keywords, or visiting websites (e.g., posters on advertisement boards). In contrast to actively using Google to search for depression-related keywords, or visiting websites.

Strangely, this study include a large, diverse sample, and validated symptom measures. We recognize, however, four limitations. First, this study was not designed to evaluate the recruitment effectiveness or cost effectiveness of different recruitment strategies. With the theoretical exception of those recruited through Google, it was not feasible to collect data on the number of potential participants exposed to each recruitment modality. Second, for the same reason, we relied on self-reported recruitment source. In our case, any misclassification error could be random, which would dilute any true difference; or dependent on a factor of relevance, in which case true differences could appear either strengthened or weakened. To minimize the risk of random forced-choice answers, participants provided free-text answers that were then classified according to a protocol. A third limitation concerns cross-cultural validity. Although several of our findings are likely to have cross-cultural validity, region-specific variations in subgroup media consumption behaviors and clinical practice would render our findings less representative. Therefore, our findings require replication in other countries before a cross-cultural pattern can be asserted.

A fourth and final limitation pertains to disentangling recruitment pathways. Several respondents reported a two-step recruitment path, e.g., referral by a friend who in turn was exposed to a newspaper advertisement. Participants who reported being exposed to several recruitment efforts were classified according to their deemed primary path. Related to this caveat, it is not feasible in a real-world setting to completely disentangle and isolate recruitment paths. For example, even participants who found the study while searching for non-depression-related keywords (allocated to the Google group) in all likelihood had their search results affected by previous searches, which could include depression-related search terms since Google saves data on this and uses it to customize future search results. This, along with unspecified free-text answers and unawareness of how Google-based advertisements works, may explain the few differences found between the two Google groups.

5. Conclusions

We show that self-rated recruitment source is associated with somewhat different clinical and demographic characteristics of individuals seeking ICBT for depression. Distinguishing effects were especially pronounced for those recruited by sources implying either more active treatment-seeking behaviors (e.g., via Google searches and visiting websites on mental well-being), and more passive ones (via newspaper advertisements and referrals by friends and family). Some demographic differences between groups were also found.

Acknowledgments

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Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.invent.2015.04.002.

References


