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Abstract

Sexual health service access is fundamental to good sexual health, yet interventions designed to address this have rarely been implemented or evaluated. In this paper, pilot evaluation findings for a targeted public health behavior change intervention, delivered via a website and web-app, aiming to increase uptake of sexual health services amongst 13 to 19 year-olds are reported. A pre-post questionnaire-based design was used. Matched baseline and follow-up data was identified from 148 respondents aged 13-18 years. Outcome measures were self-reported service access, self-reported intention to access services, and beliefs about services and service access identified through needs analysis. Objective service access data provided by local sexual health services was also analyzed. Analysis suggests the intervention had a significant positive effect on psychological barriers to and antecedents of service access amongst females. Males, who reported greater confidence in service access compared with females, significantly increased service access by time 2 follow-up. Available objective service access data supports the assertion that the intervention may have led to increases in service access. There is real promise for this novel digital intervention. Further evaluation is planned as the model is licensed to and rolled out by other local authorities in the UK.

Pilot evaluation of a web-based intervention targeting sexual health service access

The burden of sexually transmitted infections (STIs) and unintended pregnancy continues to be a worldwide problem [1] and despite recent improvements, the United Kingdom continues to lag behind its social and economic counterparts in addressing this issue [2]. Young people are at particular risk of STI transmission, and according to termination rates, experience of unwanted pregnancy [3]. A wealth of sexual health and behavior change literature exists focusing on programs and interventions to improve condom use, and other safer sex behaviours amongst young people (e.g. [4]). Effectiveness has been variable (e.g. [5-8]). Yet, given the World Health Organisation [9] describes sexual health services as, 'fundamental to achieving a sexually healthy society,' (p*vi*), and research has explored barriers to service access [10], few if any interventions have directly targeted this aspect of sexual health behaviour.

In addition, the proliferation of digital technologies in recent years has provided those engaging in sexual health communications with new opportunities to promote access to sexual health services and reach target audiences. Where once we were reliant on other services, professionals and organisations, and mass and print media, there is now the opportunity to reach out via online networks and access young people via their lives as 'digital natives' (e.g. [11] p10). Research evidence suggests that there is real potential for the effectiveness of online and computer based interventions targeting safer sex behaviours [12, 13] yet there is a pressing need for evidence based content and evaluation of the rapidly growing body of mHealth interventions

or 'apps' (computer applications devised for use on mobile devices such as smartphones and tablet computers) [14].

In this paper, the pilot evaluation of a targeted behavior change intervention is reported. The intervention is delivered via a website and web-app (a website optimized for viewing on a smartphone or tablet computer), and aims to improve sexual health service access amongst 13 to 19 year-olds in Warwickshire, UK (see www.respectyourself.info). Development of the intervention followed a systematic, theory and evidence based approach. A detailed description of this process and of intervention content is published elsewhere [15]. Whilst the intervention sought to provide a 'one size fits all' approach, there is a clear indication in the literature that males and females behave differently with regards sexual health help-seeking behaviors. Males tend to delay help-seeking despite experiencing symptoms [16] and few male adolescents receive any sexual health service provision [17]. Very recent research suggests males view sexual health service access as a female responsibility [18]. There is a need to understand therefore whether such an intervention differentially affects male and female users.

Despite recommendations that public health interventions incorporate the theory and evidence base from behavior change in their development [19] and a minimum of 10% of health promotion budgets are spent on evaluation [20] in practice, evaluations of theory and evidence-based interventions are rare. To the authors' knowledge, this is the first study to evaluate a behavior change intervention targeting sexual health service uptake amongst young people delivered using digital media, and including assessment of gender effects. It is also one of few examples of the evaluation of a real-world public health intervention.

Method

Design

A pre-post design was used to assess any changes in outcome variables comparing data from before the launch of the Respect Yourself (RY) website and app with data collected afterwards. Gender was included as a between-subjects variable.

Measures

In addition to age and gender of each participant, pre and post questionnaires asked participants about the number of times they had accessed sexual health services. Sexual health services were defined as, 'any service where you can get condoms, contraception, emergency contraception or advice and information about sexual health and sexual relationships. This could be Pharmacists, GP surgeries, drop-in centres, family planning clinics or similar.' At baseline they were asked about ever having accessed services and at follow-up they were asked about number of times accessed in the past 6-8 weeks.

Two likert-scale items were used to assess intentions to access sexual health services, e.g. 'I plan to go to a sexual health service when I need support or advice about my sexual health' anchored 1 = strongly disagree to 7 = strongly agree. Together the items had satisfactory internal reliability (α =.75).

The questionnaires assessed a range of beliefs derived directly from the needs analysis and intervention development process which identified a number of psychological barriers to and facilitators of sexual health service access (see [15]). For example, 'I believe I will be judged by

adults who work at sexual health services'. Items were measured using 7-point scales anchored 1= strongly agree to 7 = strongly disagree, and a mixture of positively and negatively phrased items were included to avoid response bias. Refinement of these measures using factor analysis is described in the analysis section below.

At post-intervention follow-up, the questionnaire included items asking about method of website and/or web app access (PC/laptop vs. smart phone/tablet and at home vs. at school vs. while mobile). Participants also indicated which of 14 main pages of content they had viewed, so that exposure to service access intervention content could be established. This was important as not all content within the website/app was part of the intervention. Two further items assessed the extent to which participants agreed that the website and web-app were useful and easy to use. They were each measured using 7-point scales anchored 1= strongly agree to 7 = strongly disagree.

Participants and procedure

Following institutional ethical approval, letters inviting participation in the evaluation were sent to head teachers and Personal, Social and Health Education leads in all secondary schools across Coventry and Warwickshire. The five schools that agreed to participate were provided with loco parentis consent forms to sign and letters to send out to parents of pupils explaining why the school wanted to participate. This letter gave parents the option to withdraw their child from the study. Two parents from the five schools opted to do this. All other children put forward by the schools were given the opportunity to participate, and taken through the informed consent procedure. Table 1 below compares the demographics of participants from those schools who took part at baseline, follow-up and those successfully matched across the two

time points. The higher rate of attrition by females is likely due in part to their greater representation amongst 18 year-olds who left school between data collection points, and also to the fact that one school with particularly good organization of data collection sessions was all male. In order to assess whether participants lost at follow-up differed on measures of age and intention to access sexual health services from those who completed follow-up measures, independent t-test were conducted. There were no significant differences on age (t = .729, *df* = 284, p= .467) or intention (t = .729, *df* = 284, p= .467). Chi-square analyses provided the same assessment for gender and whether or not participants had ever visited a sexual health service before. There was no significant association between service access and attrition (χ^2=.294, *df* = 1, p=.588) and the apparent attrition amongst females did not quite reach significance (χ^2=5.774, *df* = 2, p=.056).

Insert table 1 about here.

Four of the schools chose to organize study completion sessions in their IT suites, and one school chose to promote the study and ask students to participate in their own time. All potential participants were given a participant information sheet and time to consider participation. Where schools were organizing study completion sessions potential participants were able to choose not to attend the sessions. Those that chose to attend or complete the study in their own time were asked to complete a paper-based consent form. Students accessed the baseline on-line questionnaire using a web link sent to the school. Students were provided with a paper de-brief sheet when they had completed the questionnaire.

Following completion of baseline measures, the RY website and app was introduced and promoted to students and they were encouraged to access the site and explore it over the six-week summer holidays. When students returned to school in the autumn, they were reminded

about the website and app and again encouraged to access and explore it. Participants were asked to ensure that they viewed elements of the website and app relating to the intervention, that is, all content under the 'services' dropdown on the website, and almost all content on the app. Participants were then asked to complete the on-line follow-up questionnaire about two to three weeks later. De-brief sheets were provided again.

Analysis

At follow-up, all participants reported having accessed the website and/or web app at least once. Of the matched participants, 52.1 % said that they had accessed the RY website via a laptop or PC at home. The website had been viewed by 78.6% of the matched participants via a laptop or PC at school. Just over a third of matched participants (33.6%) accessed the web app or mobile site on a mobile device at home. A little more than that, 35%, accessed the web app whilst 'on the move'. Just under a quarter (22%) of participants reporting accessing the website at home and at school on a PC/laptop and via a mobile device both at home and whilst 'on the move'. More than a third (34.5%) only accessed the website on a PC/laptop at school, whilst a further 10% only accessed the website via a PC/laptop at home. Nine students (6%) used a PC only but did so both at home and at school. Two students had used the web app on a mobile device at home only and three students had used the web app 'on the move' only. Two participants had used a PC at school and the web app on a mobile device at home. Four participants had used a PC at home and a mobile device at home and 'on the move'. One participant had used a PC at home and school and the web app 'on the move'. Whilst all matched participants reported accessing either the website or app at least once, 36% indicated that they had not visited any of the core website pages, and 21% indicated that they had visited only one. This means that fewer

than 45% had visited two or more main intervention pages. This has implications for the

findings since engagement with the intervention was 'light-touch' for many, and therefore

impact on barriers to service access, beliefs and behavior may be limited as a consequence.

Questionnaire refinement: Factor analysis

In order to prepare the data for analysis, questionnaire items used to assess beliefs

targeted by the intervention, were subject to exploratory factor analysis. Five factors with Eigen

values above 1 were identified. Scrutiny of the factor loadings suggested that questionnaire items

loaded clearly onto four of the five factors. Therefore, a further principle components analysis

was conducted with a forced four factor solution and varimax rotation. Items loading onto the

first two factors demonstrated satisfactory levels of internal reliability (Factor 1 representing

seven items measuring trust in and a belief in the integrity of services, $\alpha = .734$; factor 2

consisting of four items representing beliefs that the services are important and normal, $\alpha = .647$)

and were included as composite measures in the analysis. Items loading on the third factor

demonstrated acceptable reliability once two items loading negatively were excluded (resulting

in four items representing negative perceptions relating to services and access to them. $\alpha = .570$),

and was included as a composite measure in the analysis. The three items loading onto the fourth

factor did not show satisfactory internal reliability and so they and the two excluded items from

factor three were input into further analysis individually (see table 2 below).

Descriptive statistics

Means and standard deviations for measures of intention to access sexual health services,

the three factors identified in analysis described above, and the five 'excluded' variables are

shown in table 2 below. They are shown by time (baseline and time 2 follow-up) and gender. For some measures, including intention to access sexual health services, there appears to be a small improvement by time 2 amongst females but not males.

Insert table 2 here

Table 3 below shows the frequencies of visits to sexual health services reported at baseline) and at time 2 follow-up amongst matched participants. At baseline, participants were asked about having *ever* visited sexual health services. At time 2 follow-up, participants were asked about visits to sexual health services in the last 6-8 weeks.

Insert table 3 here

The number of people reporting that they have *never* been to a sexual health service decreased by time 2, despite only asking about access in most recent 6-8 weeks. In addition, the number of people reporting accessing sexual health services either once or twice increased 100% by time 2 compared to time 1, despite only asking about the most recent 6-8 weeks. These frequency data suggest that visits to services increased amongst matched participants following the launch of the website and web-app and in the 6-8 weeks prior to them completing the follow-up questionnaire. Looking at this data by gender (see table 4 below) reveals that it is the male participants who account for the increase in visits reported.

Insert table 4 here

Inferential analyses

A 2(time: baseline T1 vs. follow-up T2) x 2(gender: female vs. male) mixed multivariate analysis of variance (MANOVA) was applied to the data for all measures included in table 2 above. There was a significant main effect of time ($F[9, 138]=2.302$; $p=.019$; $\eta_p^2=.131$); a

significant main effect of gender (F[9, 138]=4.371; p<.001; η_p^2=.222); and a significant

interaction effect of time by gender (F[9, 138]=2.239; p=.023; η_p^2=.127).

The main effect of time was due to significant differences between baseline and time 2

follow-up on factor 2: beliefs that sexual health services are important and normal (F[1,

146]=10.163; p=.002; η_p^2=.065), and the individual belief that services can be accessed free of

charge (F[1, 146]=4.416; p=.037; η_p^2=.029). Consultation of the means and standard deviations

for these measures in table 2 suggest that improvements were seen at time 2 follow-up for both

measures.

The interaction effect between time and gender was due to factor 2: beliefs that sexual

health services are important and normal (F[1, 146]=8.667; p=.004; η_p^2=.056), and the individual

beliefs that the participant could access a sexual health service when they needed to (F[1,

146]=6.373; p=.013; η_p^2=.042), that services can be accessed free of charge (F[1, 146]=4.056;

p=.046; η_p^2=.027), and that anyone of any age can access services (F[1, 146]=6.935; p=.009;

η_p^2=.045). In every case, females demonstrated improvements on the measures by time 2 follow-

up but males did not (see table 2).

Because the effect of the intervention differed for females compared with males,

consideration of the main effect of gender examined potential reasons for this. Follow-up

analysis of variance (ANOVAs) showed that the main effect of gender was due to significant

differences between males and females in responses to factor 2: beliefs that sexual health

services are important and normal (F[1, 146]=4.713; p=.032; η_p^2=.031); factor 3: negative

perceptions relating to services and accessing them (F[1, 146]=8.993; p=.003; η_p^2=.058); and the

individual belief that participants could access sexual health services when they needed them

(F[1, 146]=12.005; p=.001; η_p2=.076). Consultation of means and standard deviations for these

measures in table 2 suggests that females held stronger beliefs overall about the importance and normality of services (F1) and were less likely to hold negative perceptions (F3) than males. Males felt more confident than females that they could access services when they needed to.

A further series of MANOVA analyses were run in order to establish whether other factors led to differential scores on the measures presented in table 2. No significant interaction effects were established for mode in which intervention was accessed (website vs. web app; (F[9, 110]=.458; p=.900; η_p2=.038)), types of pages viewed (service access page views vs. no service access page views; (F[9, 110]=.803; p=.614; η_p2=.066)), or whether the intervention was rated as easy to use (easy vs. neutral or difficult ratings; (F[9, 110]=.481; p=.885; η_p2=.038)) or useful (useful vs. neutral or not useful ratings; (F[9, 110]= 1.342; p=.224; η_p2=.099)).

In order to assess whether increases in self-reported service access illustrated in table 3 above were statistically significant, McNemar repeated measures tests were performed separately for males and females. The findings confirmed that for males, there was higher access of services at T2 than at baseline (p=0.017), but that there was no difference in service access at these time points for females (p=0.453).

Chi-square analyses were run in order to establish whether mode in which intervention was accessed (website vs. web app), types of pages viewed (service access page views vs. no service access page views), and whether the intervention was rated as easy to use (easy vs. neutral or difficult ratings) and useful (useful vs. neutral or not useful ratings) led to differences in self-reported service access. No significant associations were identified (all χ^2 between .309 and 1.246, *dfs*=1, all *p*s between .265 and .578).

Finally, in order to assess whether the significant increase in access to services observed in the self-report data was also evident in objective data records, some analysis was run on data

obtained from the services regarding access. There were four genitourinary medicine (GUM) departments in Warwickshire at the time of the research; GUM Nuneaton and Bedworth, GUM Rugby, GUM Stratford, and GUM Warwick. In addition, Contraceptive and Sexual Health (CASH) services were run county-wide with various sites for access. Table 5 below shows mean attendance at the five sources of sexual health service for people aged 13-19 years for the eight months that data were available in the year after the website was launched compared with the same eight months from the previous year.

Insert table 5 here.

For the four GUM service sites, access to services increased between pre RY website and web app launch and the same period post-launch. There also appears to be a slight decrease in numbers per month accessing CASH services. In order to ascertain whether these differences were statistically significant, paired samples (repeated measures) t-tests were run to compare the data from each service site pre and post-intervention launch. This analysis suggested that there were statistically significant increases between pre and post-launch for GUM Nuneaton and Bedworth (t=-6.053, *df*=7, *p*=.001) and GUM Rugby (t=-4.79, *df*=7, *p*=.002). Other differences observed for GUM Warwick, GUM Stratford and CASH were not significant (all ts=-1.513 to 1.722, *df*s=7, all *p*s = .129 to .636).

Discussion

This study aimed to evaluate a real-world public health intervention, incorporating behavior change theory and using digital media to target sexual health service uptake amongst young people. Whilst intention to access services increased between baseline and time 2 amongst females, this increase was not significant. A more positive finding was that there were

statistically significant improvements on measures of beliefs, between baseline and time 2 follow-up, about sexual health service access being important and normal (Factor 2) and about services being free of charge. Interaction effects between time and gender demonstrate that the increases seen over time for these beliefs are due to improvements among females only. In addition, these interaction effects illustrated that females experienced enhanced beliefs about services being accessible to anyone of any age, and that they felt more confident they could access a sexual health service when they needed to following the intervention, but that these improvements did not apply to male participants.

Despite females demonstrating improvements in beliefs relating to service access, it was males who reported a significant increase in the behavior of 'ever' having visited sexual health services. Numbers were relatively small, requiring caution to be adopted, but twice the number of males reported having accessed a sexual health service post-intervention compared to pre-intervention. Gender differences, regardless of the impact of the intervention, were also revealed. Females were significantly more likely to respond positively to questionnaire items relating to the importance and normality of services, and hold less negative views of services and accessing them, than males. In contrast, males reported feeling more confident that they could access sexual health services when they needed to.

The improvements observed for participants are undoubtedly positive and suggest the website/app may be effective in addressing important antecedents of service access as well as increasing access to sexual health services. Furthermore, the objective service access data suggests that for the two more deprived GUM locations (Nuneaton and Bedworth, and Rugby) in Warwickshire there is a statistically significant increase in numbers of young people accessing the service each month when comparing eight months of the year pre-intervention to the same

eight months post-intervention. Although there are no statistically significant changes for the other locations, this finding to some degree corroborates what was found in the self-report questionnaire data about service access.

Clearly, there is a need to be cautious about these findings, because a number of complex factors will always influence service access, and it is not possible to demonstrate that any increases were due purely to the launch of the RY website and web app. The pilot nature of the data and other methodological weaknesses must also be considered and are discussed further below. The potential of this intervention is demonstrated however, and the research provides further evidence for the utility of evidence-based on-line interventions [12, 13] in supporting public health agendas, and contributes to the currently limited literature evaluating mHealth behavior change interventions [14, 21, 22].

Gender differences identified within analyses are unsurprising given what is known in the extant literature [e.g. 16, 17, 18]. Females in the sample demonstrated a more positive attitude towards sexual health service access but were less confident about accessing them when they had a need. The intervention appears to have improved both attitudinal and confidence-related beliefs amongst females. It may be that this did not translate into access behavior because participating females did not have an identified need to act upon. Females tend to be better at help-seeking in response to a need, such as experiencing symptoms [16].

The greater levels of confidence in service access reported by males may reflect gender-role expectations around sexual attitudes and behavior generally [23], and given their relatively higher score at baseline, could explain why they did not demonstrate improvements on this measure post-intervention in the way that females did. It may also explain why males reported

increased service access post-intervention. Under conditions of high self-efficacy, simply being exposed to the intervention may have provided a 'cue to action' as specified by the Health Belief Model [24], and been enough to prompt behavioral action amongst some males [19, 25].

Analyses that looked at ratings of ease of use, perceived usefulness, mode of access (PC/laptop vs. mobile device) and exposure to behavior change content (services page access vs. not) revealed no significant findings in relation to effect on either psychological barriers/antecedents or behavior. This may reflect a loss of power to detect statistical effect caused by introduction of an additional independent variable to the analyses. If accepted as a finding however, it is disappointing in relation to the effect of services page access, since this is where the main content directed at motivating service access is contained. Alternatively this null finding, along with statistically significant effects on beliefs and behavior discussed above may be explained by the fact that simply being made aware of the website, what it contains and its availability was enough to prompt small but significant changes in this population, regardless of whether they directly viewed the services pages. In addition, the population sampled was from the general school-aged population in Warwickshire, many of whom will not have had a direct need at the time of the research to access sexual health services or information relating to them. Despite this the data has revealed significant positive findings, and these are only likely to be amplified amongst those more motivated to seek out sexual health information on-line.

A number of limitations must be considered. First, because of the naturalistic setting of the research and budget constraints, it was not possible to create effective control or comparator conditions; thus a pre-post design was adopted. Findings must be considered in light of this less robust approach to evaluation. Second, there were difficulties associated with matching data across time points and attrition because of incorrect completion of information by

participants. This has meant that analysis presented here is only from 148 participant cases from a possible 227 who completed follow-up measures. In addition, a greater proportion of females and older participants were lost to attrition, though it was identified this related to post-summer holiday school leavers from a girls' school, and analyses suggested matched participants did not differ significantly from those lost to attrition. A third limitation is that the population sampled is unlikely to be representative of the population who are currently motivated to seek out sexual health and service access information and support on-line, so the true impact of the intervention amongst a more motivated sample is uncertain. Identifying only those for whom the intervention content is currently relevant however, is not a realistic goal of naturalistic evaluation designs. Fourth, time constraints meant that only a limited follow-up period for data collection was applied. Longer-term impact has not been established. It is known that study participants accessed the intervention, and via self-report, which pages, but not the extent to which they engaged with content (e.g. length of time on pages or the website/app as a whole, number of repeat visits). Had the follow-up period been longer, this may have encouraged study participants to take a less 'light-touch' approach to the content. Lastly, no measure of sexual orientation was taken in this pilot study and it will be important to do so in larger trials where sample size may allow for analysis of intervention effect for those identifying as LGBT.

Future evaluation research is planned for this intervention as it is licensed to other local authority Public Health departments in the UK (next trial starts October 2015). The evaluation methodology has been redeveloped to address identified limitations and concerns relating to mHealth intervention evaluations outlined by Free et al. [14].

Conclusions

This is the first evaluation of a digital real-world public health intervention targeting sexual health service access. Despite participants being asked to access the resource for research purposes (as opposed to need driving access), and the 'light touch' with which they engaged, there is evidence that the Respect Yourself website and web app had a positive effect on psychological barriers to and antecedents of sexual health service access amongst females, and had a direct effect on service access amongst males, possibly via a 'cue to action' effect. Available objective service access data supports the assertion that the website and web-app may have led to increases in service access amongst the target population.

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Table 1

Demographic information for participants at baseline, follow-up and matched across time points.

	Baseline (n=287)	Time 2 follow-up (n=227)	Matched baseline and T2 follow-up (n=148)
Number of males	129	134	88
Number of females	158	94	60
Age range (years)	13-18	14-18	13-17
Mean age in years (standard deviation in years)	15.71 (1.51)	16.06 (1.44)	15.72 (1.409)

Table 2

Means and (standard deviations) for beliefs and intention questionnaire measures at baseline and time 2 follow-up, by gender amongst matched participants

Questionnaire measure	Baseline		Time 2 follow-up	
	Females (n=60)	Males (n=88)	Females (n=60)	Males (n=88)
Intention to access sexual health services	3.88 (1.54)	4.05 (1.46)	4.22 (1.56)	4.05 (1.63)
Factor 1: Trust and belief in integrity of sexual health service	5.15 (0.69)	5.22 (0.81)	5.21 (0.87)	5.23 (0.91)
Factor 2: Belief services are important and normal* +	4.42 (1.03)	4.34 (1.02)	4.92 (0.95)**	4.36 (1.11)
Factor 3: Negative perceptions re: services and access to them +	5.00 (1.03)	4.61 (0.98)	5.03 (0.87)	4.53 (1.09)
Belief that sexual health services are free of charge*	5.10 (1.12)	5.10 (1.20)	5.63 (1.16)**	5.11 (1.35)
Belief that sexual health services are accessible to anyone of any age	5.08 (1.37)	5.58 (1.42)	5.52 (1.28)**	5.27 (1.67)
Belief that sexual health services will support any sexual health concern or need	5.47 (1.21)	5.70 (0.94)	5.47 (1.13)	5.50 (1.42)
Belief that needing to wait to be seen at sexual health services is acceptable	4.50 (1.23)	4.52 (1.43)	4.73 (1.33)	4.44 (1.62)
Belief that they could access a sexual health service when needed +	4.15 (1.42)	5.16 (1.45)	4.72 (1.39)**	4.88 1.37)

*significant effect of time $p < .05$
** significant interaction of time*gender $p < .05$
+ significant effect of gender $p < .05$

Table 3

Self-reported frequency of visits to sexual health services amongst matched participants at

baseline and time 2 follow-up.

Number of visits	Baseline (Visits Ever) (n=148)	Follow-up T2 (visits in last 6-8 weeks) (n=148)
Never	123	114
1 or 2 times	11	22
3 or 4 times	4	2
5 or 6 times	1	4
7 or more times	9	6

Table 4

Self-reported frequency of visits to sexual health services(and %) by gender amongst matched participants at baseline and follow-up.

Number of visits	Baseline T1 access ever		Follow-up T2 access in last 6-8 weeks	
	Female (n=60)	Male (n=88)	Female (n=60)	Male (n=88)
Never	49 (82%)	74 (84%)**	52 (87%)	62 (70%)**
Ever*	11 (18%)	14 (16%)**	8 (13%)	26 (30%)**

* Because of the small numbers of participants reporting 3 or more visits at both time points, the data are collapsed into never visited vs. ever visited.
** Significant association p=.017

Table 5

Mean scores for numbers of service visits by 13-19 year-olds at five Warwickshire services comparing April-November 2011 with the same period in 2012

Service	Pre-intervention Mean number of service visits per month	Post-intervention Mean number of service visits per month
GUM Nuneaton & Bedworth	83.75	110.25*
GUM Rugby	39.25	65.37*
GUM Warwick	36.5	38
GUM Stratford	16.63	21.75
CASH services	309.75	293.25

*significant increase p<.01