

Reliable and accurate data capture using tablets, phones or other mobile devices

Mihaela Barbu MSc, Nilufar Ahmed PhD

Background

SWISH (Social Work Intervention following Self Harm) is a randomised controlled feasibility trial, conducted by Swansea University within Hywel Dda Health Board at Glangwili General Hospital and Prince Phillip Hospital. The trial involves the evaluation of an intervention for patients who present to A&E with self-harm and who are assessed to be at low risk of self-harm and would normally be referred back to GP for management. We have developed and use an online randomisation system to be accessed from mobiles or tablets, in order to obtain an instantaneous allocation result for a Social Work Intervention Trial, for our colleagues from College of Human and Health Sciences at Swansea University.

Intervention

SWISH started in January 2015, and is currently in recruitment (99 participants recruited). SWISH plans to recruit 120 participants from 5 sites in Wales, 60 in each of the intervention and control arms. The intervention is a 4-6 week programme of face-to-face and phone call contact. The control arm, is treatment as usual, whereby patients are referred back to GP for ongoing care.

Application Goal - Randomisation on mobile devices

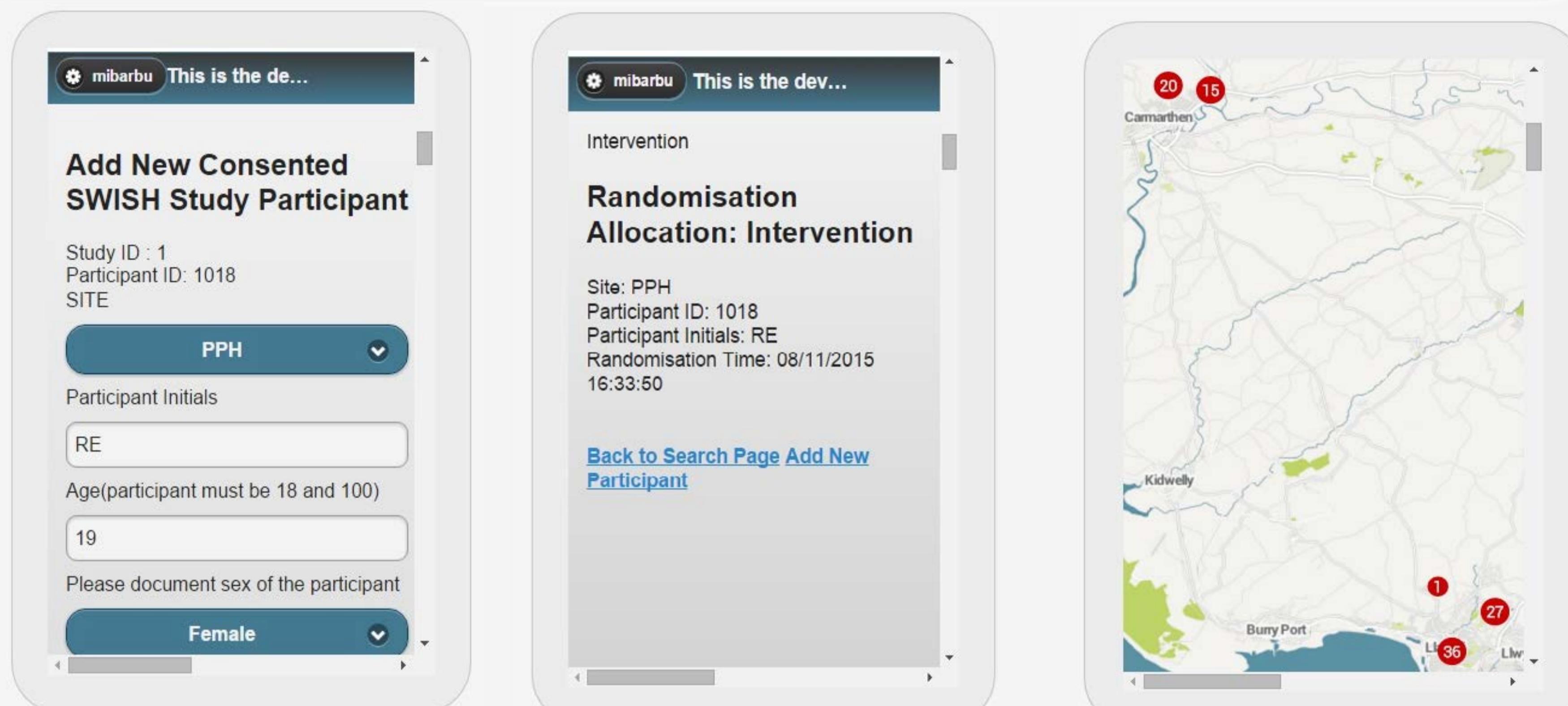


Figure 1 - Printscreens from SWISH Randomization on mobile platform

The research team preferred the mobile platform option because of the portability and ease of access. The resulting application was designed to take randomisation variables input in a focused manner, to collect participant data and to give a rapid randomisation of participants for the trial (Figure1). The application database contains data collected through mobile views. The data items are stored in an SQL database, specifically designed for this application. The items collected were agreed between the SWISH research team and the programmer. The randomisation application requirements contained metadata and details about data collected for auditing and data analysis.

Implementation: Model - View - Controller

The programmer used Model-View-Controller pattern on Microsoft .net 4.5 framework (MVC4 for mobile platform) and Entity Framework version 6 to connect and update the randomisation database. The application was developed following Agile Methodologies Software Development, using programming language C#. The stages in developing the application were: Recording Requirements, Software development (3 iterations), Testing, Live Version Software Maintenance.

Model - View - Controller Architecture (Figure2)

- A Model , which represents the underlying, logical structure of data in a software application and the high-level class associated with it. This object model does not contain any information about the user interface.
- A View , which is a collection of classes representing the elements in the user interface (all of the things the user can see and respond to on the screen, such as buttons, display boxes, and so forth).
- A Controller , which represents the classes connecting the model and the view, and is used to communicate between classes in the model and view.

The application security is ensured through user authentication.

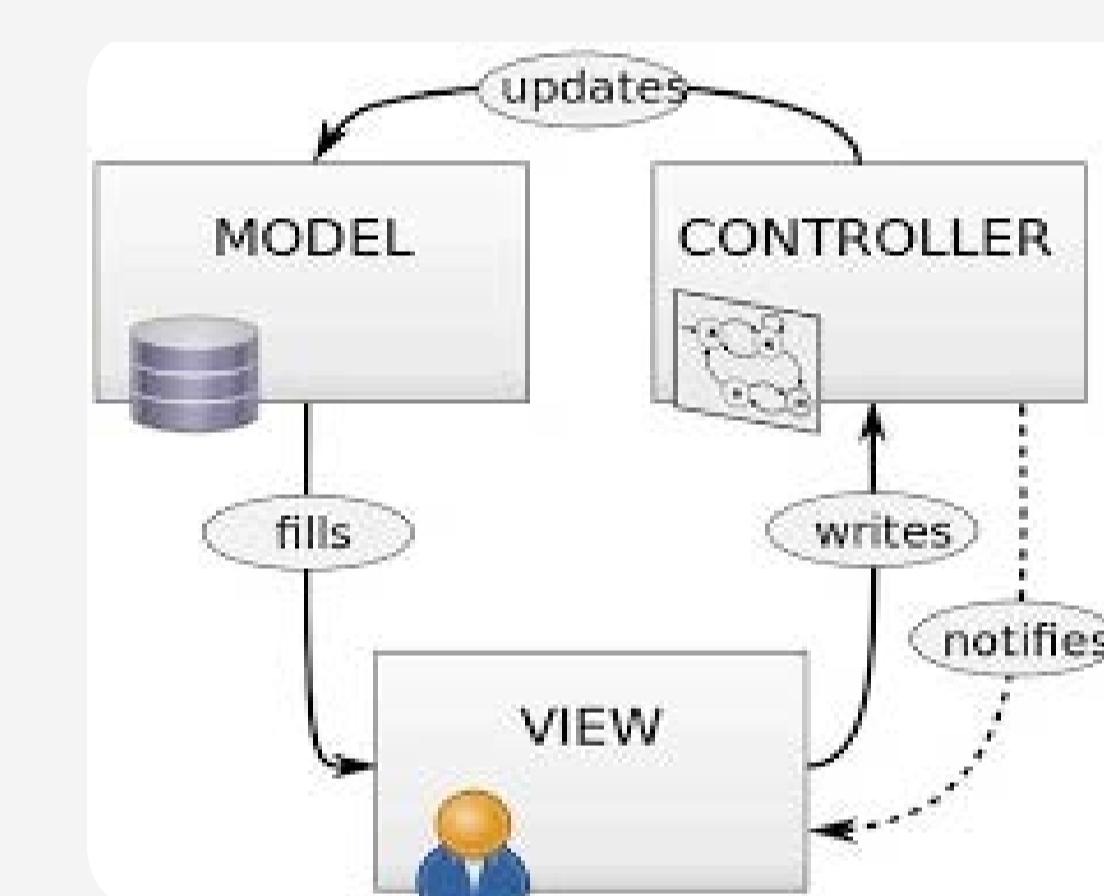


Figure 2 - MVC Architecture

Visualising Randomisation Dataset

Data collected through the described application allows us to gather SWISH Randomisation dataset. Each set of data has particular display needs and the purpose of visualisation of datasets is to place in a visual context trends or correlations that might go undetected. The study data collected until now shows a preponderance of females recruited in SWISH trial (60%) in the SWISH Study and an average age of 35.5 years old through the 5 sites in the study. The graphics below show provide an overview of the participant recruitment per site and a more aggregate visualization of recruitment by gender, randomisation allocation and age averaged per site (Figures 3a and 3b).



Figure 3 a - Visualisation of SWISH

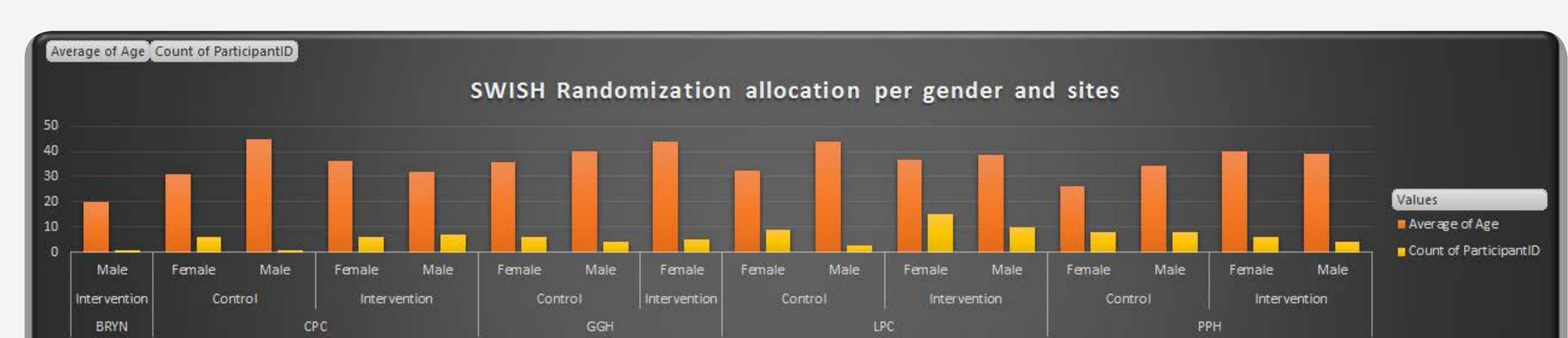


Figure 3 b - Visualisation of SWISH Data

Acknowledgments

The trial closes to recruitment in January 2016 and full results will be available from May 2016. The results will report on the trial objectives and discuss the range of social factors identified.

Funded by the National Institute for Social Care and Health Research (NISCHR)

The authors thank the SWISH team Professor Peter Huxley, Dr. Ann John, Dr Saiful Islam, Professor Ian Russell, Lily Bidmead, Penny Llewelyn, Angie Darlington, Dr. Phil Jones and Professor Lynette Joubert (Melbourne University).



Bwrdd Iechyd Prifysgo
Hywel Dda
University Health Board



Ymchwili Iechyd
a Gofal Cymru
Health and Care
Research Wales

