

**Impact case study (REF3b)**

<p><b>Institution:</b> University of Nottingham</p>
<p><b>Unit of Assessment:</b> UoA4 - Psychology, Psychiatry and Neuroscience</p>
<p><b>Title of case study:</b> The development of the China-based company 'Systematic Review Solutions' and enhanced knowledge of evidence-based medicine</p>
<p><b>1. Summary of the impact</b></p> <p>The Cochrane Schizophrenia Systematic Review Group (CSzG) at the University of Nottingham provided a knowledge platform upon which to develop a novel Systematic Review Solutions company in China (SRS), creating a new market in training of evidence-based medicine for healthcare professionals, researchers and clinicians across China. Since inception in 2009, SRS has generated income, created jobs, expanded to new cities, improved knowledge of evidence-based healthcare, changed prescribing practices and gained the support of Chinese Universities and hospitals including the United Family Healthcare Group, China's largest private hospital.</p>
<p><b>2. Underpinning research</b></p> <p>Jun Xia (Director and Founder of SRS and Research Associate, Faculty of Medicine and Health Sciences) joined the University of Nottingham Cochrane Schizophrenia Group (UoN CSzG) in 2007 to conduct Systematic Reviews (SR). Since her employment at Nottingham she has produced, and continues to produce, a series of Cochrane Systematic Reviews investigating the effectiveness of a variety of different schizophrenia treatments<sup>1-3</sup> with the Nottingham Cochrane team leader Professor Clive Adams (Co-ordinating Editor, UoN CSzG) and including the collaboration of Professor Chungbo Li (Clinician and Satellite Member of CSzG) in Shanghai Mental Health Centre (SMHC)<sup>4</sup>.</p> <p>Xia's key research interest is how evidence-based medicine and Cochrane methodology practices are shared across the UK and China. In 2008 Xia investigated the reach of Chinese medical literature including its accessibility in the West<sup>5</sup> and identified a gap for an SR training process to be put in place in China. This would allow for effective transmission to other clinicians in China and also for shared knowledge with the West. Xia's publication identified that there were difficulties in communicating Western review methods to China and there were few specialist SR training providers in China indicating a blank canvas for a whole new market to be created. In 2008, the limited provision of training opportunities in China included courses run only for Chinese University medical students or a course run once annually by the Chinese Cochrane Centre. This course could only support 100 students per year and therefore was in high demand with long waiting lists. There was therefore a significant gap here to run multiple training courses using a course model from the University of Nottingham Cochrane Review Training Course developed by Professor Adams<sup>6</sup> (<a href="http://szg.cochrane.org/workshops-training-and-events">http://szg.cochrane.org/workshops-training-and-events</a>).</p> <p>The aim of a dedicated SR company was to provide a framework upon which to conduct high quality systematic reviews on all aspects of healthcare (using methodologies routinely conducted at University of Nottingham) to directly inform clinical practice as well as providing high quality training for healthcare professionals, clinicians, medical students and other healthcare researchers. Therefore, as a direct result of her body of work at Nottingham's CSzG and due to the opportunities afforded to her to work with Professor Li with SMHC, Systematic Review Solutions (SRS) was started by Jun Xia in Yantai in August 2009 with a view to initially provide courses in Shanghai and Beijing.</p> <p>The company currently specialises in services relevant to conducting Cochrane SRs working in collaboration with experienced Cochrane reviewers, statisticians and Cochrane groups. SRS services include training courses in systematic reviewing and meta-analysis, commissioned systematic review projects, trial searches, data extraction, data analysis and translation. Thus, in addition to the success of the training courses provided, the continued success of the company is reliant upon its ability to produce publishable SR outputs for research scientists in China. In 2011 Xia embarked on a PhD utilising her knowledge gained at Nottingham and through her company, investigating access, activity and quality screening of Chinese clinical trials in schizophrenia under the supervision of Adams. This enhances the knowledge exchange between Xia's research and the commercial impact of her company.</p>

**3. References to the research***Underpinning Research*

1. Maayan N, Soares-Weiser K, Xia J, Adams, CE (2011) Antipsychotic combinations for schizophrenia. *Cochrane Database of Systematic Reviews* DOI: 10.1002/14651858.CD009005. IF: 5.703, Citations: 3
2. Xia J, Merinder Lars B, Belgamwar MR. (2012) Psychoeducation for schizophrenia. *Cochrane Database of Systematic Reviews* DOI: 10.1002/14651858.CD002831.pub2. IF: 5.703, Citations: 60
3. Suttajit S, Srisurapanont M, Xia J, Suttajit S, Maneeton B, Maneeton N. (2013) Quetiapine versus typical antipsychotic medications for schizophrenia. *Cochrane Database of Systematic Reviews*. DOI: 10.1002/14651858.CD007815.pub2. IF: 5.703, Citations: 1
4. Li C, Xia J, Wang J (2009). Risperidone dose for schizophrenia. *Cochrane Database of Systematic Reviews*. DOI: 10.1002/14651858.CD007474.pub2. IF: 5.703, Citations: 13
5. Xia J, Wright J, Adams CE (2008). Five large Chinese biomedical bibliographic databases: accessibility and coverage. *Health Information and Libraries Journal*, 25, 55-61. DOI: 10.1111/j.1471-1842.2007.00734.x. IF: 0.662, Citations: 32.

*Funding for Start Up of Company*

£2000 by American donor Dr John Davis (Chicago University). Xia used the funding received by Dr Davis to complete the registration of the company.

*Key researchers*

Jun Xia: Director and Founder of Systematic Review Solutions (2009-present) and Research Associate, Faculty of Medicine & Health Sciences (2007-present)

Professor Clive Adams: Professor and Co-ordinating Editor, Cochrane Schizophrenia Group, Faculty of Medicine & Health Sciences (2007-present)

Professor Chungbo Li: Clinician, Shanghai Mental Health Centre, Satellite Member of Cochrane Schizophrenia Group in Shanghai, China

**4. Details of the impact****The start up and growth of a new international company**

SRS was started in China in 2009 with initial funding for the company (£2000), donated by Dr John Davis (USA), being used to complete the registration of the company. The income generated by the completion of the first SR training course held in Shanghai at the end of 2009 was approximately £18,000 gross (£8,000 profit) indicating promising results for company growth.

Since inception in late 2009, SRS has grown to employ four full-time and one part-time senior and associate administrative staff based permanently in China. Along with four part-time research assistants, 2 systematic review trainers (all former attendees of the systematic review training course<sup>a</sup>) and 7 senior consultants from different backgrounds including mental health research (Professor Adams, Nottingham), pain research (Professor Wiffen, Oxford), drug and alcohol addiction (Steve Lui), psychiatry (Mahesh Jayaram, Leeds), obstetrics (Masoud Afnan, Chief Medical Officer for Beijing United Family Hospital), translation of systematic review to NICE guidelines (John Rathbone, University of Sheffield) and information specialist (Samantha Roberts, Nottinghamshire Healthcare NHS Trust) demonstrating the company's international links.

To pilot SRS in other cities, early training courses were set up by Xia in 2010 with support of Professor Li and Professor Adams, providing additional Cochrane methodological review expertise and mental health consultancy. As a consequence of this collaboration and training, Professor Li's unit in SMHC is now a satellite group of the Cochrane Schizophrenia Group in Nottingham<sup>b</sup>, narrowing the gap between knowledge exchange between China and the West as identified in Xia's publication<sup>5</sup>. From its early beginnings, demand for training courses has doubled in the last 3 years and courses are now held six times yearly in Beijing, Shanghai and Xi'An generating £100k income<sup>a</sup>.

**Impact on International Commerce and Healthcare**

SRS has achieved commercial impact by applying UoN CSzG methodology as a template for doctors in China, using knowledge exchange to generate economic impact across the Chinese Healthcare system, in particular in Beijing and Shanghai. Highly skilled people have gained employment, for example all research assistants and trainers in SRS were attendees of the SR training, thus providing students the opportunity for high quality jobs<sup>a</sup>. Additionally, clinicians are employing new methodologies to better identify evidence-based treatment upon SR training in order to translate this into better clinical practice (patients are treated based upon the best evidence available)<sup>c</sup>. For example, attendee of the SRS training course and Director of the Department of Clinical Psychiatry in SMHC and Shanghai Jiao Tong University School of Medicine said:

*'The SRS course changed my perception of evidence-based practice, it made me more aware of searching up to date literature to inform my clinical practice. For example, what are the most effective interventions to treat people with schizophrenia. The course was incredibly interactive, accessible and an asset to SMHC. I hope that it continues to extend across China to help other clinicians be better informed'*<sup>c</sup>.

SRS has also shown economic impact through collaborations with industry across China, including high quality knowledge transfer partnerships as evidenced by support of Capital Medical University (Beijing) and United Family Healthcare Group, the largest private hospital in China<sup>d</sup>. Previous Chinese collaborations have also included University of Nottingham Ningbo Campus (Ningbo) and hospitals including Shanghai Number 1 People's Hospital (Shanghai) and Beijing Xiyuan Traditional Chinese Medicine Hospital (Beijing), Teaching Hospital of Xi'an, Medical Collage (Xi'an). Private SR courses have also been given to clinicians in Beijing Tiantan Hospital (one day course \$5,000) and Shanghai Zhongshan Hospital (£100 half an hour), Shanghai Number 1 People's Hospital (one day £1,500), Shanghai Yangpu District Hospital (3 days £6,000) and researchers in Yantai Binzhou Medical University. Internet SR courses began in May 2013 and, to date, on average each large 4 day training event generates £15,000-18,000 gross with a single day training generating £4,000.

**Impact on practitioners and services through increased uptake of scientific training**

Since 2009, SRS has been providing high quality intensive training for healthcare professionals across China. These courses have gained in popularity and have been extremely well received with 82% of attendees in the largest course to date in 2013 rating the course as 'excellent'<sup>e</sup>. When asked how relevant each session is to their needs as clinicians, over 90% reported 'very relevant'<sup>e</sup>. When asked how attendees found about the course, 30% was based on word of mouth therefore the course has generated positive reviews within the healthcare community<sup>f</sup>. Course attendees provided independent feedback on a popular online bioscience website for professionals in medical, pharmaceutical, and bioscience sector (Ding Xiang Yuan). Feedback was very positive, including: *'the programme is very well designed with a balanced mixture of didactic lectures and hands-on workshops. Teaching staff are not only the experts of this area, but also are very patient with answering queries. They did a great job in teaching SR to both layman and researchers in confined time'*<sup>g</sup>.

As well as being popular and well received within the Chinese medical community, the training courses have also changed clinical practice in various Chinese institutions, for example the change of prescription of psychiatric medications for schizophrenia based upon up-to-date evidence<sup>c</sup>.

**Systematic Review Project Management Service**

Finally, started in August 2012 due to demand in China, a specialised systematic review service was developed to assist healthcare professionals, and in particular clinicians, in the development of their Cochrane reviews and protocols in order to inform clinical practice. There are currently 9 active reviews and 3 protocols on clinical topics such as cancer, chemotherapy, septic shock, schizophrenia and pseudomyxoma (see publications resulting from SRS input) generating a total income of £50,000 (gross). In early 2013 alone, 5 SR reviews with authors based in China were published as a result of input from SRS (Publications available upon request): reviews that greatly

benefited from SRS input.

**5. Sources to corroborate the impact**

- a. Systematic Review Solutions (SRS) company registration and details (<http://www.review-solutions.cn/English/index.html>). Individual employment contracts available upon request (translation required). Income figures per annum available.
- b. Documentation corroborating China satellite company
- c. Statement from Director (Physician-in-chief) from the Department of Clinical Psychiatry (Shanghai Mental Health Centre) and Shanghai Jiao Tong University School of Medicine describing how the training has improved their practice and providing feedback on the course
- d. Documentation from training days with company logos from: Universities across China, Shanghai Mental Health Centre and United Family Healthcare Group etc
- e. Evaluation/feedback forms from training days including: clinicians, health care professionals, researchers and policy makers to evaluate each different training day
- f. Internal statistics report (individual registration available upon request). Translation required
- g. Screenshot of online forum with examples of positive course feedback