Klaic Marlena (Orcid ID: 0000-0003-2328-0503)

Check for updates

How soon do allied health professionals lose confidence to perform EBP activities? A cross-sectional study

Author Manuscript

Authors

Marlena Klaic, GradCert ClinRehab, GCertHealthSystemsMgmt, BOT (Hons) [1]

Fiona McDermott, PhD, MUrbanPlanning, DipSocStuds, BA [2]

Terry Haines, PhD, GCertHealthEconomics, BPhysiotherapy (Hons) [3]

Institutions involved in study

Monash Health, 400 Warrigal Road, Cheltenham, Victoria 3192, Australia.

Royal Hobart Hospital, 48 Liverpool Street, Hobart, Tasmania 7000, Australia

Author Correspondence details[1]

[1] Corresponding author[1]

[1]Research Leader, Allied Health, Royal Melbourne Hospital, Grattan Street Parkville Vic 3052, Australia, Email: marlena.klaic@mh.org.au, Tel: +613 9342 7000, Fax: +613 9342 8440

[2]Associate Professor, Department of Social Work, Monash University, fiona.mcdermott@med.monash.edu.au, Tel: +613 9903 1709

[3]Professor, Head of School of Primary and Allied Health Care, Monash University, terrence.haines@monash.edu, Tel: +61 3 9904 4158

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/jep.13001

This article is protected by copyright. All rights reserved.

Author Manuscript

Running title

EBP and Allied Health Professionals

Title

How soon do allied health professionals lose confidence to perform EBP activities? A cross-sectional study.

Abstract

Objective

To explore if there is a relationship between allied health professionals' confidence to perform a range of evidence based practice (EBP) activities and the time since they graduated from their entry level degree and the presence of post-graduate qualifications.

Design

Cross-sectional survey

Setting

Allied health professionals from two Australian public metropolitan health services, including acute, sub-acute and community settings.

Participants

Sample of 288 (n=288) allied health professionals from the disciplines of physiotherapy, occupational therapy, speech pathology, social work, dietetics / nutrition and other.

Main outcome measure

Cross-sectional survey including 12 questions measuring respondents' confidence to conduct a range of EBP activities

This article is protected by copyright. All rights reserved.

Results

Allied health professionals begin to lose confidence related to EBP activities within the first five years of clinical practice, particularly for those activities involving critical analysis of published studies. Respondents with post-graduate qualifications were more likely to report greater confidence with EBP activities, suggesting that higher level qualifications protect against the effect of degradation of EBP skills and confidence over time.

Conclusions

Allied health professionals' confidence to perform EBP activities degrades over time, particularly for those individuals with no post-graduate qualifications. Registration and accreditation bodies along with allied health professional employers, should explore potential strategies to preserve and enhance EBP skills, confidence and behaviours.

Keywords

Evidence based practice, allied health professionals, clinical confidence, research utilisation

Author Manuscript

This article is protected by copyright. All rights reserved.

Author Manuscript

Introduction

Contemporary definitions of evidence based practice (EBP) include a synthesis of current best evidence and clinical expertise with consideration to the patient's values and preferences [1]. EBP is both a philosophical approach to healthcare and a set of behaviours when applied in practice. These behaviours include: 1) Formulation of a research question; 2) Retrieval of best available evidence; 3) Critical appraisal of evidence; 4) Application of evidence to practice and; 5) Evaluation of practice [2]. Research suggests that EBP has the potential to meet numerous healthcare aims including improved patient outcomes, decreased variation in care and reduction in per capita healthcare costs. A recent parallel cohort comparison study compared two models of care over a period of 7 years; one model included EBP skill building activities (such as training for staff in critical appraisal of literature), and accompanying policies (such as protected staff time to engage in these activities). The comparison model was standard practice and as such, did not include structured EBP activities or related policies [3]. The results from this longitudinal study found that patients treated under the EBP model experienced significantly reduced rates of mortality and decreased length of stay. This is one of numerous studies that have demonstrated strong associations between EBP and improvements in the quality and safety of healthcare delivery [4-6].

Allied health professionals make up almost 25% of the health workforce in Australia [7] and should justifiably be the subject of training and support to implement EBP. Published literature on EBP within allied health spans more than 20 years and includes topics such as

This article is protected by copyright. All rights reserved.

Author Manuscript

barriers and facilitators to the provision of EBP. There appears to be broad agreement across most allied health professional groups that EBP is a 'good idea' and that research evidence can improve patient care [8-18]. However, there is a large body of evidence suggesting that implementation of EBP behaviours in every day clinical decision making remains low. There are numerous reasons cited for this including lack of time and lack of skills in understanding and applying research [8,12,13,18-42] . In an attempt to address cited barriers, a number of studies have reported on strategies to enhance the uptake of EBP including changing curricular content within academic institutions. Ensuring that education providers include EBP skills as a core component of their training was the first recommendation made by the Sicily Statement - an internationally accepted consensus statement that describes the minimum requirements for EBP educational training programs [2]. From an Australian perspective, this recommendation appears to have been addressed for many allied health professional groups through the process of accreditation. For example, a new graduate Australian occupational therapist (OT) must first complete their training program with an educational provider that has been accredited by the Occupational Therapy Council (Australia & New Zealand) Ltd. The OT must then maintain registration with the Australian Health Practitioner Regulation Agency (AHPRA). This body is responsible for ensuring registered health professionals are competent and ethical, and that education and training is high quality. To fulfil this objective, a number of professions regulated by AHPRA have guidelines for accreditation of entry level clinicians that mandate training in EBP skills. These include physiotherapy, medicine, nursing and midwifery, podiatry, occupational

This article is protected by copyright. All rights reserved.

Author Manuscript

therapy and radiography. Other allied health professional groups that are not included under AHPRA may still have a focus on EBP. For example, Speech Pathology Australia require that practicing clinicians are aware of current research and participate in research activities as part of their competency based standards [43].

It is likely that most recent Australian graduates from the allied health professions will have been exposed to education and training aimed at enhancing skills in EBP. It is therefore surprising that research continues to find that clinicians report a lack of skills as a significant barrier to EBP, despite the commitment of education providers, registration bodies and peak consensus groups to facilitate this. If we assume that the university-based training has assisted allied health professionals to become competent and confident in using EBP, then somewhere between graduation and participation in the earlier research just mentioned, allied health professionals have lost the confidence in their skills.

There have so far only been two studies that have explored this potential loss of confidence. Jette et al surveyed 488 physiotherapists and found that search skills and confidence to perform critical appraisal of research was lower in respondents who had graduated more than 15 years ago from their entry level degree, compared to those who graduated less than 5 years ago [8]. Similarly, Salbach et al reported that physiotherapists' working in stroke services (n=270) confidence to perform EBP activities was lower in respondents more than 15 years since graduation compared to those who were less than 5 years, between 5-10 years and 11-15 years[18]. These findings would give the impression that there is potentially a

This article is protected by copyright. All rights reserved.

problem amongst physiotherapy practitioners who have worked clinically for more than 15 years, however, the collapsing of data into 5-year intervals may have actually obscured a loss of confidence that takes place much earlier. Further, these papers both reported that higher levels of formal training created greater levels of confidence, yet did not adjust for this potential confounder in their analyses.

This study aims to examine the relationship between allied health professionals' confidence to perform a range of EBP activities and the number of years worked clinically and highest level of qualification received.

Methods

This paper reports on the data collected from baseline surveys as part of a larger study exploring if EBP behaviours can be enhanced amongst a large group of allied health professionals.

Study design

Analytical cross-sectional survey

Participants and setting

All allied health professionals from two metropolitan health services in Australia were considered eligible to participate in the study. The first site was located in Victoria and provides 260,000 episodes of hospital care and employs 16,000 staff across 40 sites and services. The second site was located in Tasmania and provides more than 50,000 episodes of care and employs 3,000 sites. Although both sites are considered to be metropolitan, it should be noted that the Tasmanian site is significantly smaller and services a regional population. The allied health disciplines that participated in the study included audiology,

This article is protected by copyright. All rights reserved.

Author Manuscript

Author Manuscript

exercise physiology, nutrition / dietetics, occupational therapy, podiatry, physiotherapy, psychology (clinical and neuropsychology), speech pathology, social work and radiation therapy. The size of the potential target population in these organisations was 496 allied health professionals.

Instrument

Allied health professionals beliefs, attitudes, interest and behaviour relating to EBP, were measured using two previously validated surveys. The first four sections of the survey measured respondents' beliefs, attitudes, sources of information to guide clinical decisions and participation in EBP activities. This tool had previously been developed and used in a number of studies exploring allied health professionals' experience of EBP[8, 18]. The fifth section of the survey measured respondents' confidence to conduct evidence-based activities, such as formulating a research question. Respondents are asked to rate their level of confidence on an 11-point scale from 0% (cannot do at all) to 100% (certain can do). This tool is known as the evidence-based practice confidence scale (EPIC) and has been found to be valid, comprehensible and reliable[17, 18, 44-47]. The data reported in this paper specifically relates to EPIC.

Demographic information including respondents' age, gender, years worked clinically post-graduation, level of qualification and work setting were all collected on the first page of the instrument. We used the response scaling of 1 year, 2 years, 3 years, 4 years, 5-10 years, 10-15 years, 15-20 years, and >20 years for the years worked clinically post-graduation item rather than a numeric response scaling approach due to the risk of the survey becoming

This article is protected by copyright. All rights reserved.

identifiable. The employment profile in the participating organisations indicated that there were far fewer potential respondents in the higher years of experience categories, thus if the exact number of years was cross-referenced against their professional background, the identity of the respondent could have become known.

Procedure

Email contact was made with the managers of each allied health professional group explaining the study and inviting participation from all their qualified staff members. A web-based link was included in the email along with a PDF of the survey to ensure that computer access was not a barrier to participation. Pre-paid return envelopes were provided to both sites and all disciplines for those clinicians who completed a hard copy of the survey. These were then manually entered by a research assistant. All respondents who completed the survey, either online or hardcopy, were eligible to go into a drawer to win a $100 gift voucher. Implied consent was assumed for all respondents who submitted a completed survey. The survey was open for a total of four weeks and a reminder email was sent at the end of the first week. Participation in the survey was encouraged by reminding allied health professionals of the potential to win a $100 voucher and engaging discipline specific managers to support staff with time and encouragement to complete the survey.

Ethics

The study was approved by the Human Research Ethics Committee (HREC) at each site.

This article is protected by copyright. All rights reserved.

Author Manuscript

Author Manuscript

Analysis

Analysis commenced by examining box plots illustrating the relationship between confidence to conduct EBP activities and years worked clinically, using only respondents whose highest academic degree was at Bachelor level. This qualification was chosen as Bachelor level of degrees typically have less emphasis on research training than honours, masters and PhD level degrees. A box plot panel was constructed to illustrate these results for each of the 12-items included in the EPIC scale.

A multivariable regression was then performed on the whole dataset with adjustment for the highest level of qualification attained by the respondent to account for the potentially confounding affect that higher levels of training may have. A separate multivariable regression analysis for each of the 12-items on the EPIC scale was undertaken using highest level of qualification treated as categorical covariate with the bachelor degree serving as the reference value. Years of clinical experience was also entered into these models as a categorical variable with 1 year of experience serving as the reference value. Statistically significant results were set at *p* value of <.05 with 95% confidence intervals and all analyses were undertaken using STATA SE Version 13.0.

Results

A total of 288 (n=288) surveys were completed, representing a 58% response rate. Participant demographics are displayed in table 1 and show that the majority of respondents were female (88.2%) and below the age of 40 (71.5%). More than half were employed in permanent full-time positions (53.8%) at a Grade 2 level or below (53.4%) and

This article is protected by copyright. All rights reserved.

had graduated from their entry level health degree (56.5%) within 10 years prior to participating in the study. The highest level of qualification obtained was primarily a Bachelor's degree (49.3%) with relatively few respondents currently enrolled in post-graduate studies (8%).

Figure 1 illustrates the relationship between confidence to conduct EBP activities and years worked clinically, using only respondents whose highest academic degree was at Bachelor level (n=142). Visual analysis of the boxplots suggest there is a negative correlation between confidence to undertake particular EBP activities and years of clinical practice. For example, the box plot for question 6 (identifying strengths and weaknesses of a study design) suggests that in the first year of clinical practice, respondents are moderately confident with this activity. However, this confidence begins to reduce from the second year and continues to degrade as time progresses. Similar patterns of loss of confidence can be observed for questions relating to the component of EBP that requires critical appraisal of research literature.

The results of the multivariable regression analysis are displayed in Table 2. The two independent variables, level of qualification and years worked clinically, were significant predictors of confidence to undertake a variety of EBP activities. Allied health professionals with post-graduate qualifications, particularly at Master's and PhD levels, were significantly more likely to report higher levels of confidence with critically appraising the reliability and validity of outcome measures (p<0.01), identifying strengths and weaknesses of different

This article is protected by copyright. All rights reserved.

Author Manuscript

Author Manuscript

study designs (p<0.01) and interpreting results of statistical procedures (p<0.01). This confidence was maintained, irrespective of how long ago the respondent had acquired their higher level qualification. By contract, respondents with no post-graduate qualifications were significantly more likely to report lower levels of confidence with these same tasks from the fourth year of clinical practice. For example, confidence to interpret results of statistical procedures began to reduce in the fourth year of practice (p=0.02). The data from the multivariable regression analysis supports the findings from the boxplots i.e. allied health professionals gradually lose confidence with EBP activities over time.

Discussion

This study has found allied health professionals lose confidence in their EBP skills in under 5 years of clinical work, after controlling for higher level qualifications. It is possible that a meaningful loss of confidence begins sooner than this, but that our study was insufficiently powered to detect these changes across the smaller year categories. Despite this, our finding of a loss of confidence in under 5 years is important as previous research has not identified that EBP confidence degrades so quickly following graduation. Only two previous studies had identified when EBP skills and confidence begin to deteriorate. Jette et al and Salbach et al both found that EBP confidence was lower in respondents who had graduated more than 15 years ago, in comparison to those who graduated less than 5 years ago[8, 18]. However, both of these studies analysed age as a predictor variable in 5-year intervals which makes it difficult to determine at what point following graduation allied health professionals begin to lose confidence in EBP skills. Furthermore, these studies did not adjust their

This article is protected by copyright. All rights reserved.

Author Manuscript

analyses for higher levels of qualifications, despite reporting that there was a correlation between EBP confidence and higher degrees.

It is important to consider why EBP confidence may degrade so quickly in allied health professionals. It is possible that this may be due to early career allied health professionals being predominantly focused on clinical work. The demographics of the respondents support this theory with more than half of the allied health professionals (59.4%) having worked clinically for less than 10 years and employed at a level of Grade 2 or below (53.4%). In the Australian context, the grading system typically reflects the amount of clinical work expected of the allied health professional. Position descriptions for Grade 1 roles are strongly focused on clinical work whilst Grade 3 roles include a minimum of 35% of non-clinical activities such as quality, research and supervision [48]. It is plausible that recently graduated allied health professionals lose their confidence to conduct EBP activities due to a lack of opportunity to practice these skills. Exposure to higher qualifications is a protective factor against the degradation of these skills most likely due to a greater level of training in EBP activities such as critical appraisals.

It is also important to consider the role and influence of clinical supervisors in relation to maintaining new graduate allied health professionals' EBP skills and confidence. Colleagues, particularly direct supervisors, are a primary source of information guiding clinical decision making for early career health professionals. Clinical supervisors who have lost confidence in their own skills to undertake a range of EBP activities, may not be able to guide or support

This article is protected by copyright. All rights reserved.

Author Manuscript

newly graduated allied health professionals to use all aspects of the EBP model when making clinical decisions. It is apparent that there must be investment in maintaining early career allied health professionals' confidence to undertake EBP activities. However, it is also apparent that there must be investment in teaching (and maintaining) EBP skills with mid to late-career allied health professionals. One potential method of achieving this is to expose allied health professionals at all stages of their career to research. Numerous studies have found that exposure to and engagement in research activities improves EBP attitudes and beliefs, reduces the perception of barriers and acts as a predictor for likelihood to implement research findings into practice[23, 26, 42, 49, 50].

This study identified that allied health professionals with no formal post-graduate qualifications experience a significant early loss of confidence to undertake the activities associated with one particular aspect of the EBP model i.e. utilising research evidence in clinical decision making. The ability of individual health professionals to undertake the 5-steps necessary to translate evidence into practice has a significant impact on both consumers of allied health care interventions and funders of allied health services. If allied health professionals rely predominantly on their own clinical experience to guide decision making, and fail to incorporate high quality research, there is a risk that patients will not receive evidence-based care. There is a significant body of research which suggest that evidence-based care reduces patient mortality and morbidity and improves patient outcomes. Furthermore, funding bodies are increasingly demanding evidence of effectiveness of services and interventions being provided by allied health professionals.

This article is protected by copyright. All rights reserved.

This requires EBP skills such as selection and incorporation of outcome measurements and justification of intervention(s) selection based on high quality published research.

Limitations

Limitations to this study include the nature of a cross-section study design. It cannot be assumed that the relationship between the dependent variable i.e. confidence to conduct EBP, and independent variables i.e. years worked clinically and qualification received, are cause-and-effect. The respondents who participated were drawn from two metropolitan hospitals, indicating that the perspectives and experiences of allied health professionals from regional areas may not be represented.

Future research directions

Recently graduated allied health professionals are typically equipped with the knowledge and skills to confidently participate in EBP activities. However, these skills degrade quickly, particularly for the professionals with no post-graduate qualifications. If allied health professionals are to provide a practice that is evidence based, there must be investment in strategies which ensure maintenance of EBP skills, confidence and behaviours. Further research determining the timing, frequency and format of these strategies is important.

This article is protected by copyright. All rights reserved.

Author Manuscript

Author Manuscript

REFERENCE LIST

1. Guyatt GH, Meade MO, Jaeschke RZ, Cook DJ, Haynes RB. Practitioners of evidence based care. Not all clinicians need to appraise evidence from scratch but all need some skills. *BMJ.* 2000;320(7240):954-955.
2. Dawes M, Summerskill W, Glasziou P, et al. Sicily statement on evidence-based practice. *BMC Med Educ.* 2005;5(1):1.
3. Emparanza JI, Cabello JB, Burls AJ. Does evidence-based practice improve patient outcomes? An analysis of a natural experiment in a Spanish hospital. *J Eval Clin Pract.* 2015;21(6):1059-1065.
4. Peiris CL, Taylor NF, Shields N. Extra physical therapy reduces patient length of stay and improves functional outcomes and quality of life in people with acute or subacute conditions: a systematic review. *Arch Phys Med Rehabil.* 2011;92(9):1490-1500.
5. Morris PE, Griffin L, Thompson C, et al. Receiving early mobility during an intensive care unit admission is a predictor of improved outcomes in acute respiratory failure. *The American journal of the medical sciences.* 2011;341(5):373-377.
6. Tinetti ME, Baker DI, King M, et al. Effect of dissemination of evidence in reducing injuries from falls. *New England Journal of Medicine.* 2008 359(3):252-261.
7. Allied Health Professions Australia. What is allied health? 2017; https://ahpa.com.au/what-is-allied-health. Accessed 23rd February, 2018.
8. Jette DU, Bacon K, Batty C, et al. Evidence-based practice: beliefs, attitudes, knowledge, and behaviors of physical therapists. *Phys Ther.* 2003;83(9):786-805.
9. Bennett S, Tooth L, McKenna K, et al. Perceptions of evidence-based practice: A survey of Australian occupational therapists. *Australian Occupational Therapy Journal.* 2003;50(1):13-22.
10. Connolly BH, Lupinnaci NS, Bush AJ. Changes in attitudes and perceptions about research in physical therapy among professional physical therapist students and new graduates. *Physical Therapy.* 2001;81(5):1127-1134.
11. Iles R, Davidson M. Evidence based practice: a survey of physiotherapists' current practice. *Physiother Res Int.* 2006;11(2):93-103.
12. Kamwendo K. What do Swedish physiotherapists feel about research? A survey of perceptions, attitudes, intentions and engagement. *Physiotherapy research international : the journal for researchers and clinicians in physical therapy.* 2002;7(1):23-34.
13. McKenna K, Bennett S, Dierselhuis Z, Hoffmann T, Tooth L, McCluskey A. Australian occupational therapists' use of an online evidence-based practice database (OTseeker). *Health information and libraries journal.* 2005;22(3):205-214.
14. McCluskey A. Occupational therapists report a low level of knowledge, skill and involvement in evidence-based practice. *Australian Occupational Therapy Journal.* 2003;50(1):3-12.
15. Powell CA, Case-Smith J. Information literacy skills of occupational therapy graduates: promoting evidence-based practice in the MOT curriculum. *Med Ref Serv Q.* 2010;29(4):363-380.
16. Powell CA, Case-Smith J. Information literacy skills of occupational therapy graduates: a survey of learning outcomes. *J Med Libr Assoc.* 2003;91(4):468-477.
17. Salbach NM, Guilcher SJ, Jaglal SB, Davis DA. Factors influencing information seeking by physical therapists providing stroke management. *Phys Ther.* 2009;89(10):1039-1050.

This article is protected by copyright. All rights reserved.

Author Manuscript

18. Salbach NM, Jaglal SB, Korner-Bitensky N, Rappolt S, Davis D. Practitioner and organizational barriers to evidence-based practice of physical therapists for people with stroke. *Phys Ther.* 2007;87(10):1284-1303.
19. Fruth SJ, Van Veld RD, Despos CA, Martin RD, Hecker A, Sincroft EE. The influence of a topic-specific, research-based presentation on physical therapists' beliefs and practices regarding evidence-based practice. *Physiotherapy Theory and Practice.* 2010;26(8):537-557.
20. Schreiber J, Stern P, Marchetti G, Provident I, Turocy PS. School-based pediatric physical therapistsĝ€™ perspectives on evidence-based practice. *Pediatric Physical Therapy.* 2008;20(4):292-302.
21. Grimmer-Somers K, Lekkas P, Nyland L, Young A, Kumar S. Perspectives on research evidence and clinical practice: a survey of Australian physiotherapists. *Physiotherapy research international : the journal for researchers and clinicians in physical therapy.* 2007;12(3):147-161.
22. Salls J, Dolhi C, Silverman L, Hansen M. The use of evidence-based practice by occupational therapists. *Occupational Therapy in Health Care.* 2009;23(2):134-145.
23. Byham-Gray LD, Gilbride JA, Dixon LB, Stage FK. Evidence-based practice: what are dietitians' perceptions, attitudes, and knowledge? *J Am Diet Assoc.* 2005;105(10):1574-1581.
24. Thomas DE, Kukuruzovic R, Martino B, Chauhan SS, Elliott EJ. Knowledge and use of evidence-based nutrition: A survey of paediatric dietitians. *Journal of Human Nutrition and Dietetics.* 2003;16(5):315-322.
25. O'Connor S, Pettigrew C. The barriers perceived to prevent the successful implementation of evidence-based practice by speech and language therapists. *International Journal of Language & Communication Disorders.* 2009;44(6):1018-1035.
26. Zipoli RP, Jr., Kennedy M. Evidence-based practice among speech-language pathologists: attitudes, utilization, and barriers. *American journal of speech-language pathology / American Speech-Language-Hearing Association.* 2005;14(3):208-220.
27. Heiwe S, Kajermo KN, Raijatyni L, et al. Evidence-based practice: Attitudes, knowledge and behaviour among allied health care professionals. *International Journal for Quality in Health Care.* 2011;23(2):198-209.
28. Upton D, Upton P. Knowledge and use of evidence-based practice by allied health and health science professionals in the United Kingdom. *Journal of Allied Health.* 2006;35(3):127-133.
29. Lai NM, Teng CL, Lee ML. The place and barriers of evidence based practice: knowledge and perceptions of medical, nursing and allied health practitioners in malaysia. *BMC Res Notes.* 2010;3:279.
30. Gosling AS, Westbrook JI. Allied health professionals' use of online evidence: A survey of 790 staff working in the Australian public hospital system. *International Journal of Medical Informatics.* 2004;73(4):391-401.
31. Delany C, Bialocerkowski A. Incorporating evidence in clinical education; Barriers and opportunities in allied health. *The Internet Journal of Allied Health Sciences and Practice.* 2011;9(1):1-16.
32. Upton D. Clinical effectiveness and EBP 3: Application by health-care professionals. *British Journal of Therapy and Rehabilitation.* 1999;6(2):86-90.
33. Döpp CME, Steultjens EMJ, Radel J. A Survey of Evidence-Based Practise among Dutch Occupational Therapists. *Occupational Therapy International.* 2012;19(1):17-27.

This article is protected by copyright. All rights reserved.

Author Manuscript

34. McCurtin A, Roddam H. Evidence-based practice: SLTs under siege or opportunity for growth? The use and nature of research evidence in the profession. *International journal of language & communication disorders / Royal College of Speech & Language Therapists.* 2012;47(1):11-26.
35. Vogt EAM, Byham-Gray LD, Parrott J, Touger-Decker R. Perceptions, Attitudes, Knowledge and Clinical Use of Evidence-Based Practice among U.S. Registered Dietitians - A Prospective Descriptive Pilot Study. *Journal of the Academy of Nutrition and Dietetics.* 2012;112(9):A64.
36. Robertson L, Graham F, Anderson J. What actually informs practice: occupational therapists' views of evidence. *The British Journal of Occupational Therapy.* 2013;76(7):317-324.
37. Swedlove F, Etcheverry E. Occupational therapists' perceptions of the value of research. *New Zealand Journal of Occupational Therapy.* 2012;59(1):5-12.
38. Mota da Silva T, da Cunha Menezes Costa L, Garcia AN, Costa LOP. What do physical therapists think about evidence-based practice? A systematic review. *Manual Therapy.* 2014(0).
39. Valdes K, von der Heyde R. Attitudes and opinions of evidence-based practice among hand therapists: a survey study. *Journal of hand therapy : official journal of the American Society of Hand Therapists.* 2012;25(3):288-295; quiz 296.
40. McCluskey A, Vratsistas-Curto A, Schurr K. Barriers and enablers to implementing multiple stroke guideline recommendations: a qualitative study. *BMC Health Serv Res.* 2013;13:323.
41. Scurlock-Evans L, Upton P, Upton D. Evidence-based practice in physiotherapy: a systematic review of barriers, enablers and interventions. *Physiotherapy.* 2014;100(3):208-219.
42. Pighills AC, Plummer D, Harvey D, Pain T. Positioning occupational therapy as a discipline on the research continuum: results of a cross-sectional survey of research experience. *Aust Occup Ther J.* 2013;60(4):241-251.
43. Speech Pathology Australia. Competency based occupational standards. 2016; https://www.speechpathologyaustralia.org.au/spaweb/Document_Management/Public/CBOS.aspx. Accessed 15th February, 2018.
44. Salbach NM, Jaglal SB. Creation and validation of the evidence-based practice confidence scale for health care professionals. *J Eval Clin Pract.* 2011;17(4):794-800.
45. Salbach NM, Jaglal SB, Williams JI. Reliability and validity of the evidence-based practice confidence (EPIC) scale. *The Journal of continuing education in the health professions.* 2013;33(1):33-40.
46. Clyde JH, Brooks D, Cameron JI, Salbach NM. Validation of the Evidence-Based Practice Confidence (EPIC) Scale With Occupational Therapists. *The American journal of occupational therapy : official publication of the American Occupational Therapy Association.* 2016;70(2):7002280010p7002280011-7002280019.
47. DeCleene Huber KE, Nichols A, Bowman K, et al. The correlation between confidence and knowledge of evidence-based practice among occupational therapy students. *The Open Journal of Occupational Therapy.* 2015;3(1):5.
48. Alfred Health. Position description - Grade 3 Occupational Therapist ABI Community Service. In: Occupational Therapy Department, ed. *Senior Clinician Occupational Therapist*. Melbourne: Alfred Health; 2018.
49. Metcalfe, C., Lewin, R., Wisher, S., Perry, S., Bannigan, K., & Moffett, J. K. (2001). Barriers to Implementing the Evidence Base in Four NHS Therapies. Physiotherapy, 87(8), 433-441. doi:10.1016/s0031-9406(05)65462-4

This article is protected by copyright. All rights reserved.

50. Taylor, N. (2009). Research experience and research interests of allied health professionals. *Journal of Allied Health, 38*(4), e107-111.

Author Manuscript

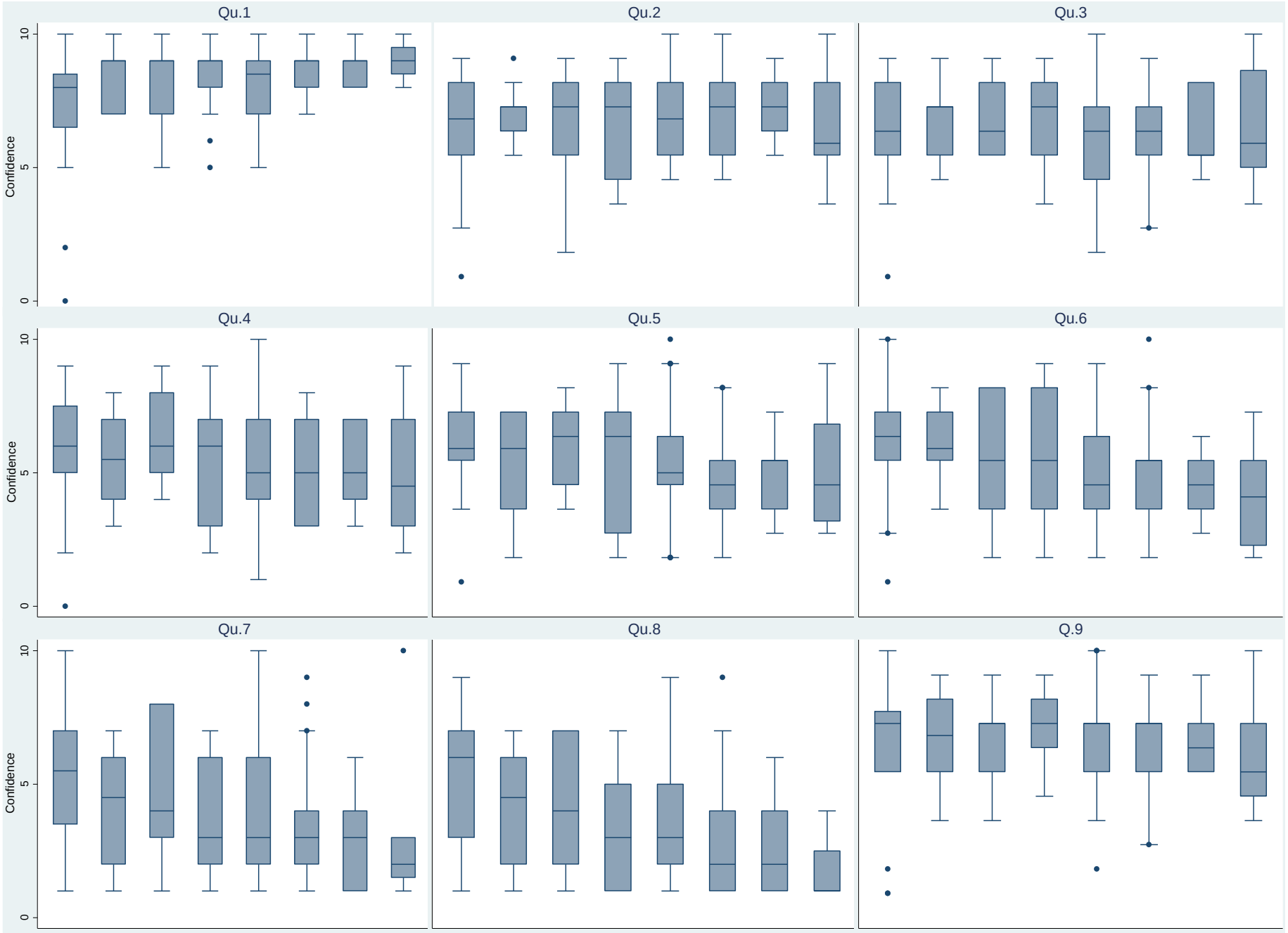
This article is protected by copyright. All rights reserved.

Figure 1 BOX PLOT PANEL FOR EBP CONFIDENCE AND YEARS WORKED CLINICALLY

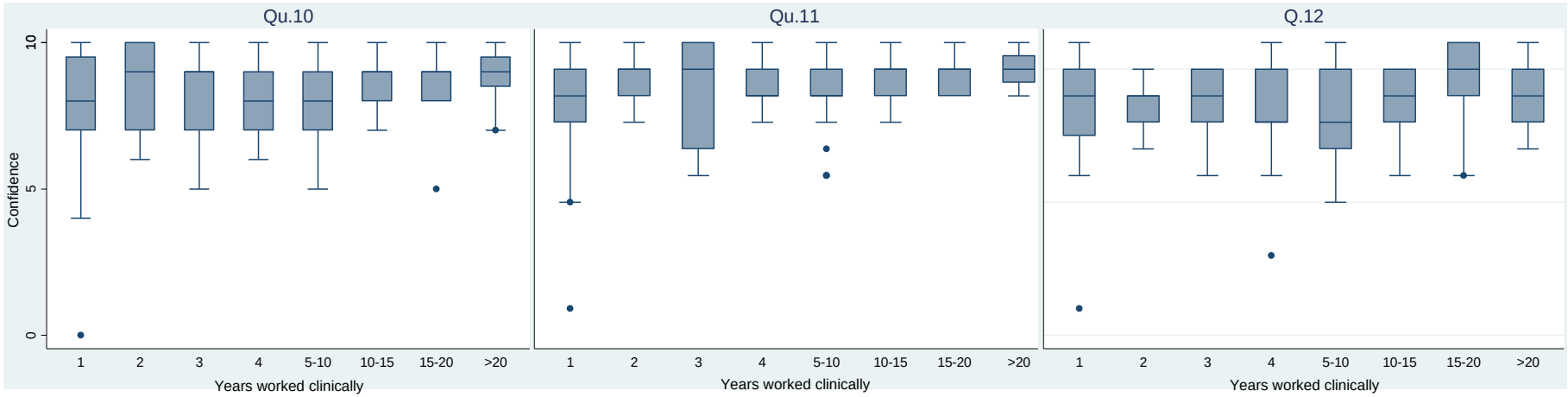
Author Manuscript

This article is protected by copyright. All rights reserved.

Author Manuscript



This article is protected by copyright. All rights reserved.



Legend: Participants with highest academic qualification at Bachelor level (n=142).

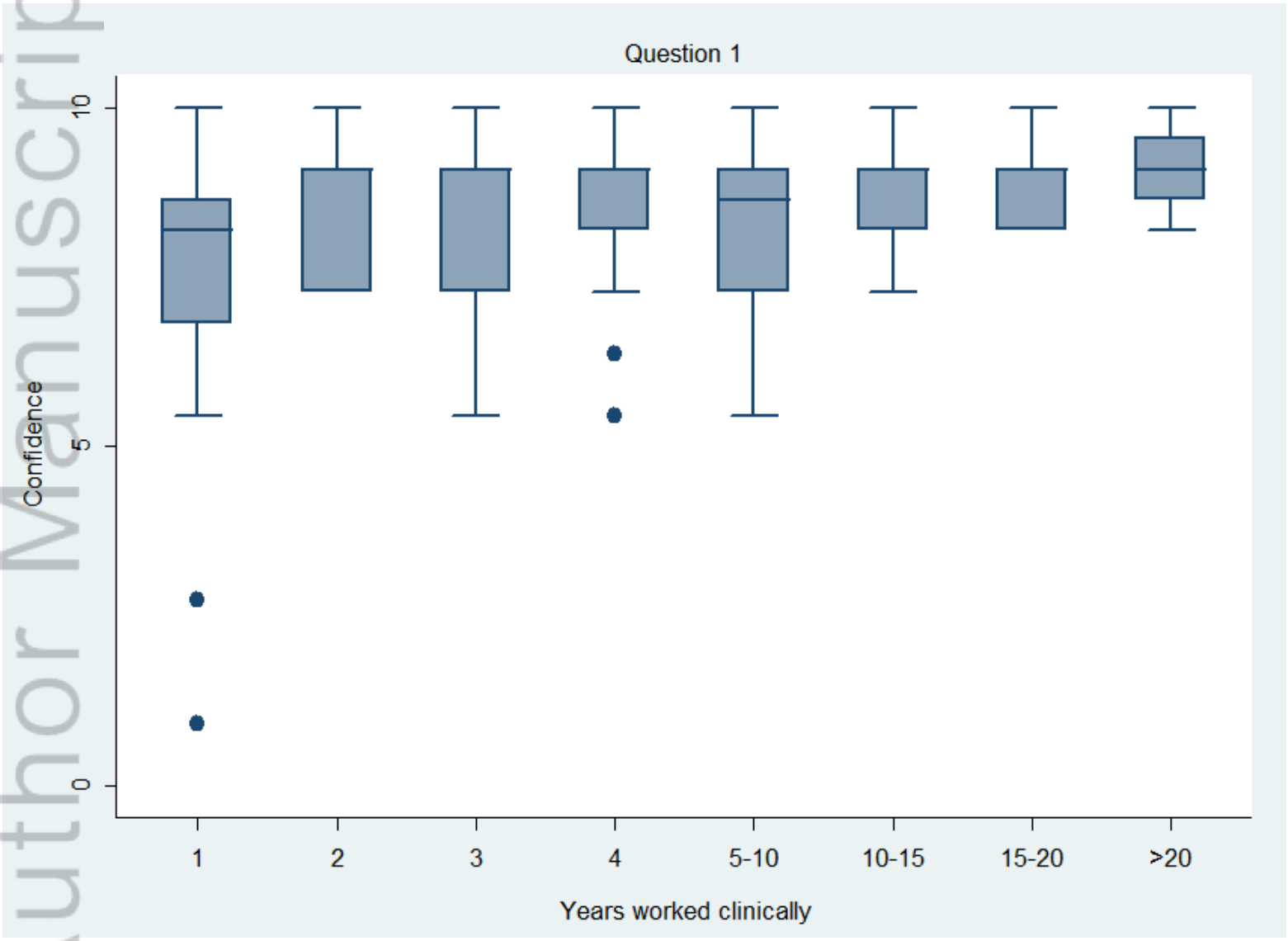
Respondents asked to rate confidence on a 10-point Likert scale from 0% “cannot do at all” to 100% “certain can do”. Questions as follow:

1. Identify clinical problems following a patient assessment.
2. Formulate a question based on the clinical problem to guide a literature search.
3. Effectively search the relevant literature to address the question.
4. Critically appraise the literature for reliability and relevance.
5. Critically appraise the reliability and validity of outcome measures.
6. Identify the strengths and weaknesses of different study designs.
7. Interpret results of statistical procedures such as t tests, correlations and chi-square tests.
8. Interpret results of statistical procedures such as linear or logistic regression.
9. Appropriately apply evidence from the literature to the individual patient.
10. Understand your patient’s needs and treatment preferences.
11. Decide on an appropriate course of action in collaboration with the patient.
12. Continually evaluate the effect of your practice.

This article is protected by copyright. All rights reserved.

Author Manuscript

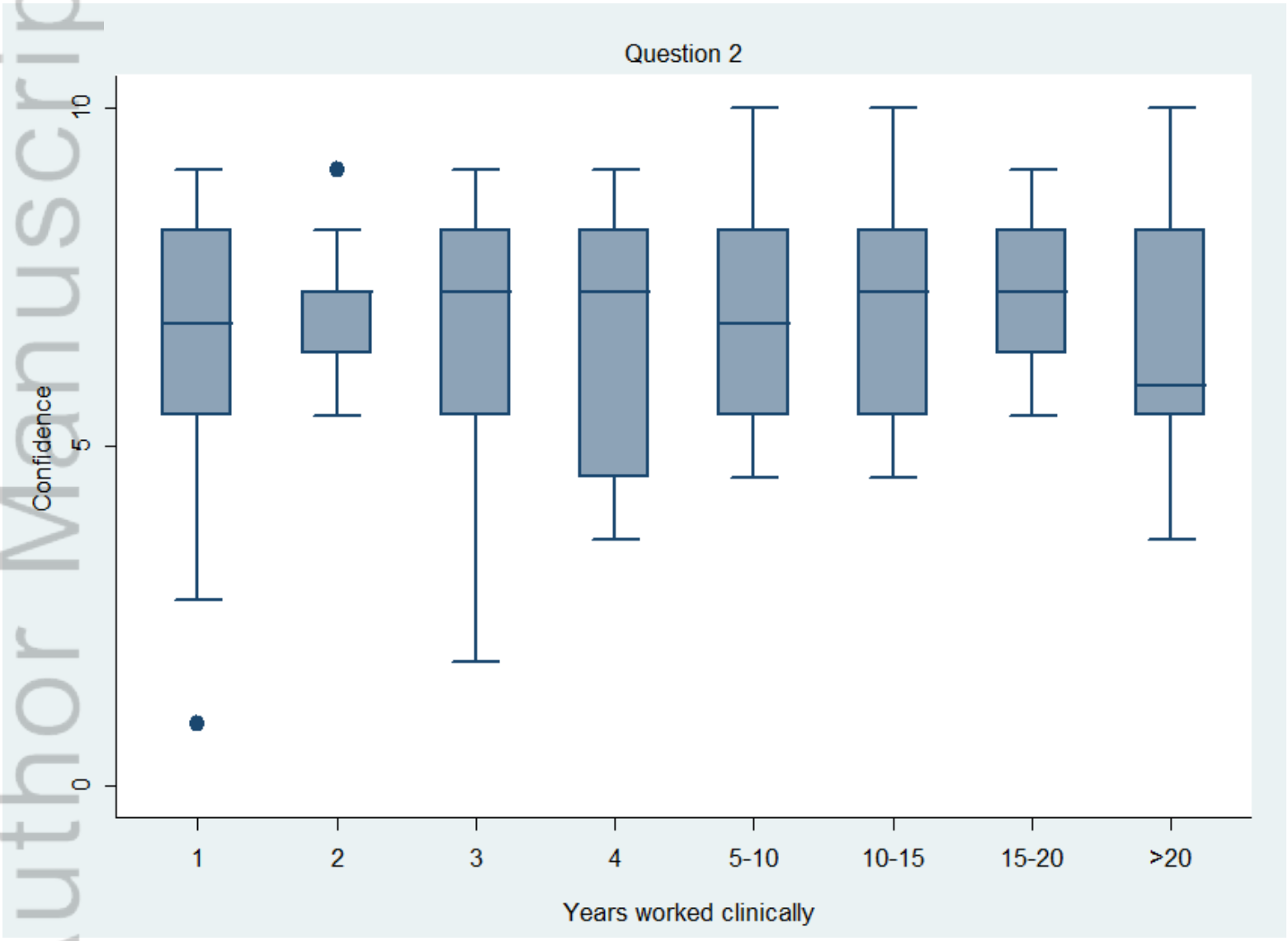
Author Manuscript



JEP_13001_F1-Q1.tif

This article is protected by copyright. All rights reserved.

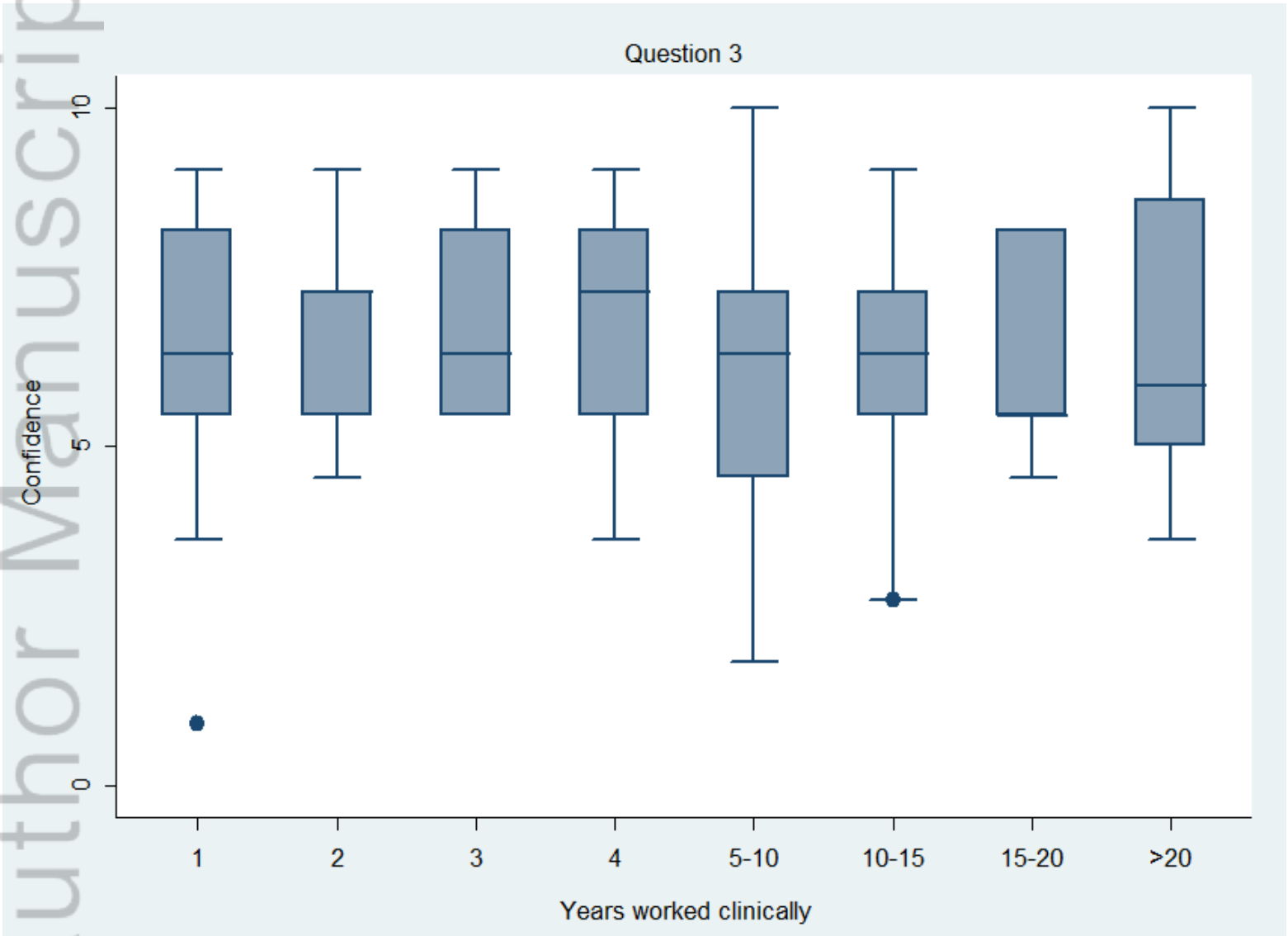
Author Manuscript



JEP_13001_F1-Q2.tif

This article is protected by copyright. All rights reserved.

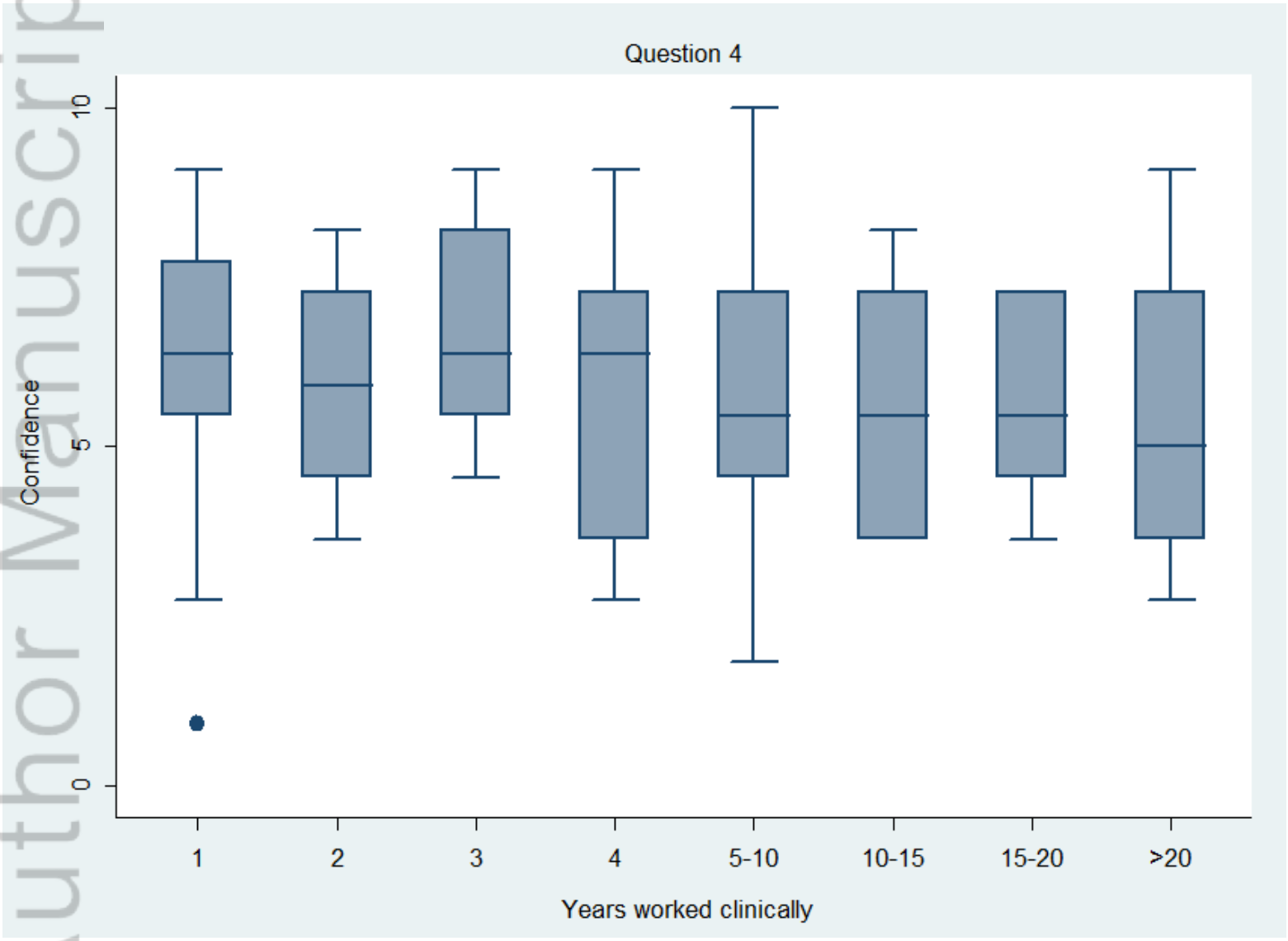
Author Manuscript



JEP_13001_F1-Q3.tif

This article is protected by copyright. All rights reserved.

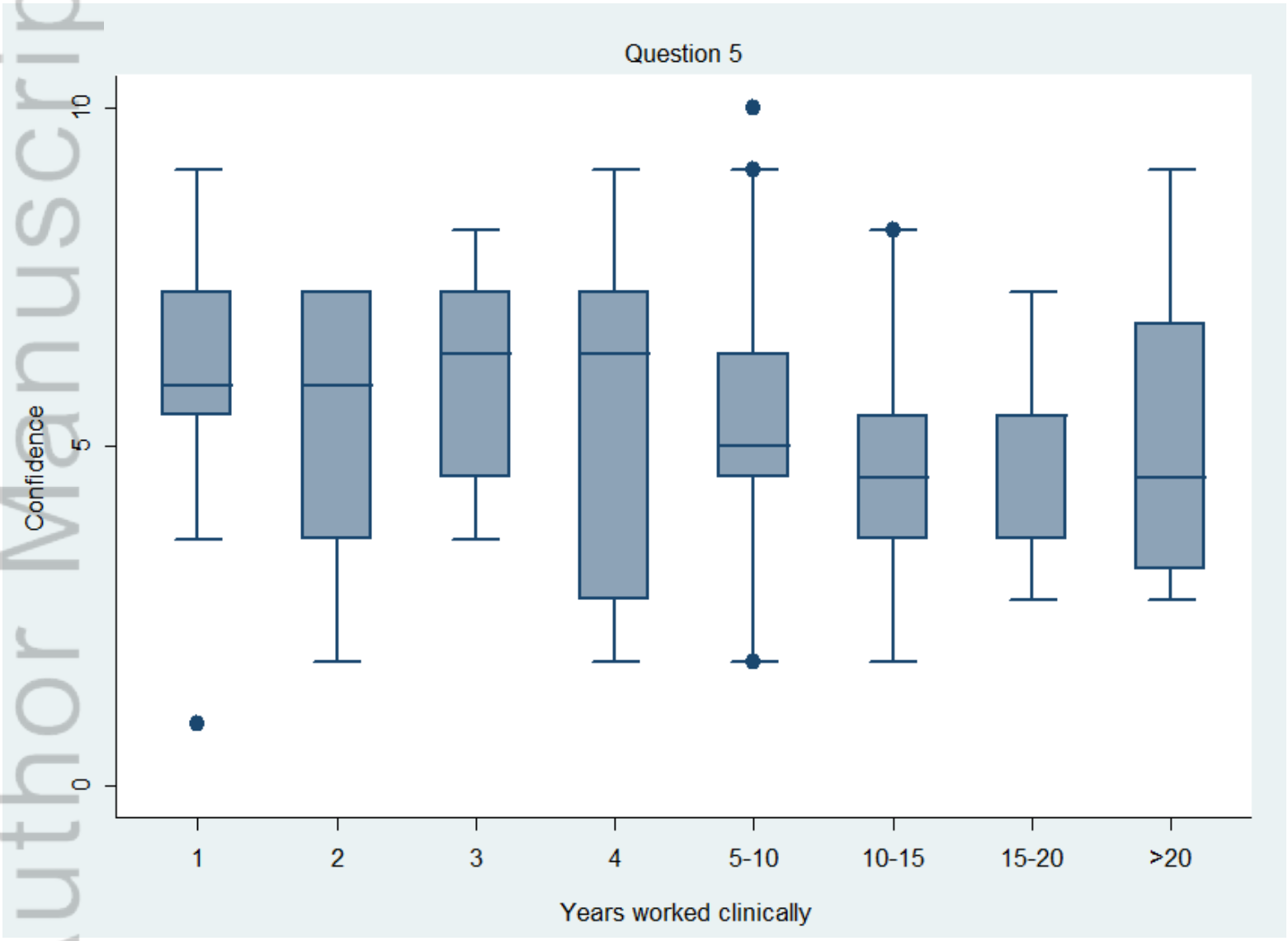
Author Manuscript



JEP_13001_F1-Q4.tif

This article is protected by copyright. All rights reserved.

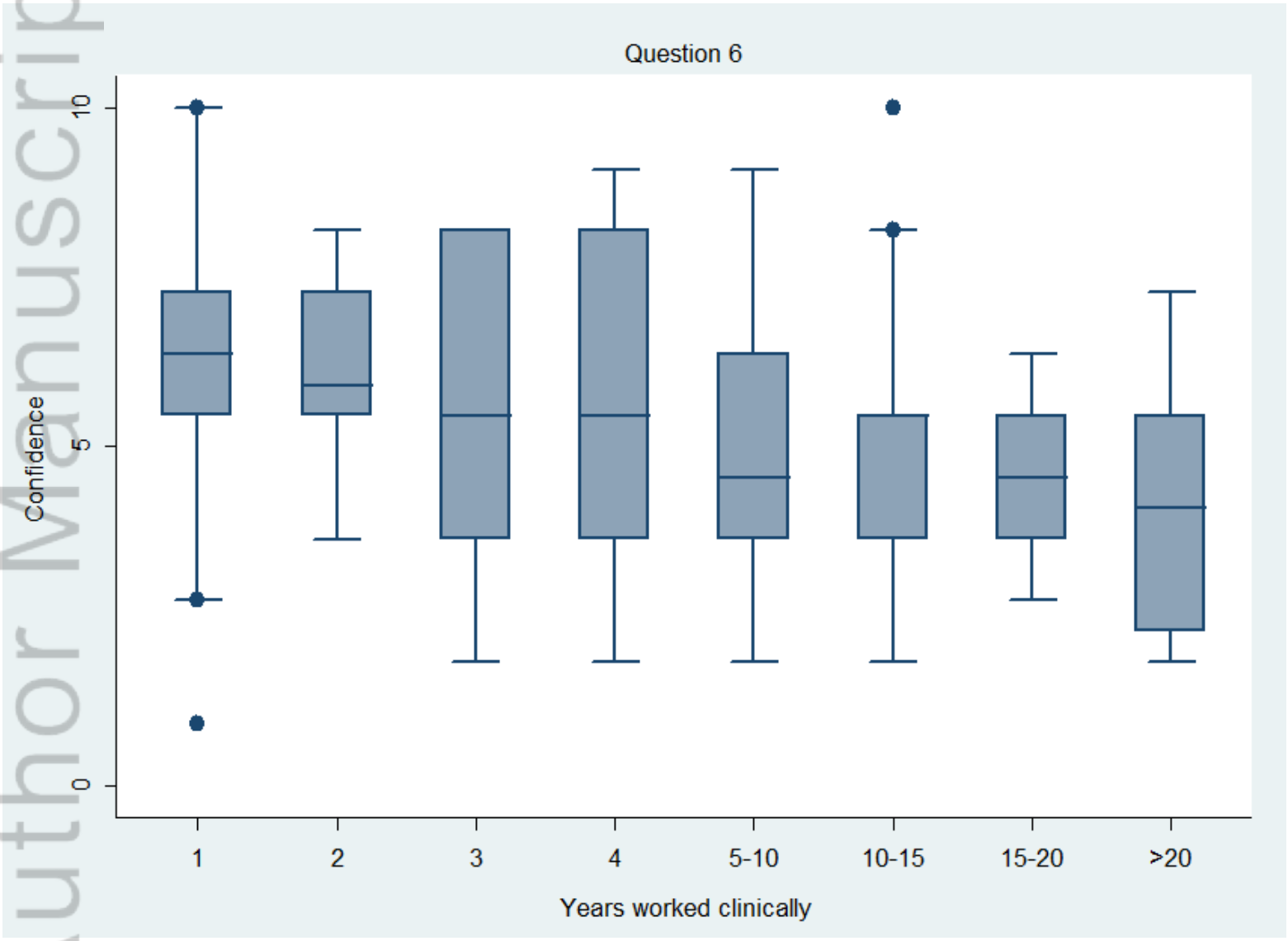
Author Manuscript



JEP_13001_F1-Q5.tif

This article is protected by copyright. All rights reserved.

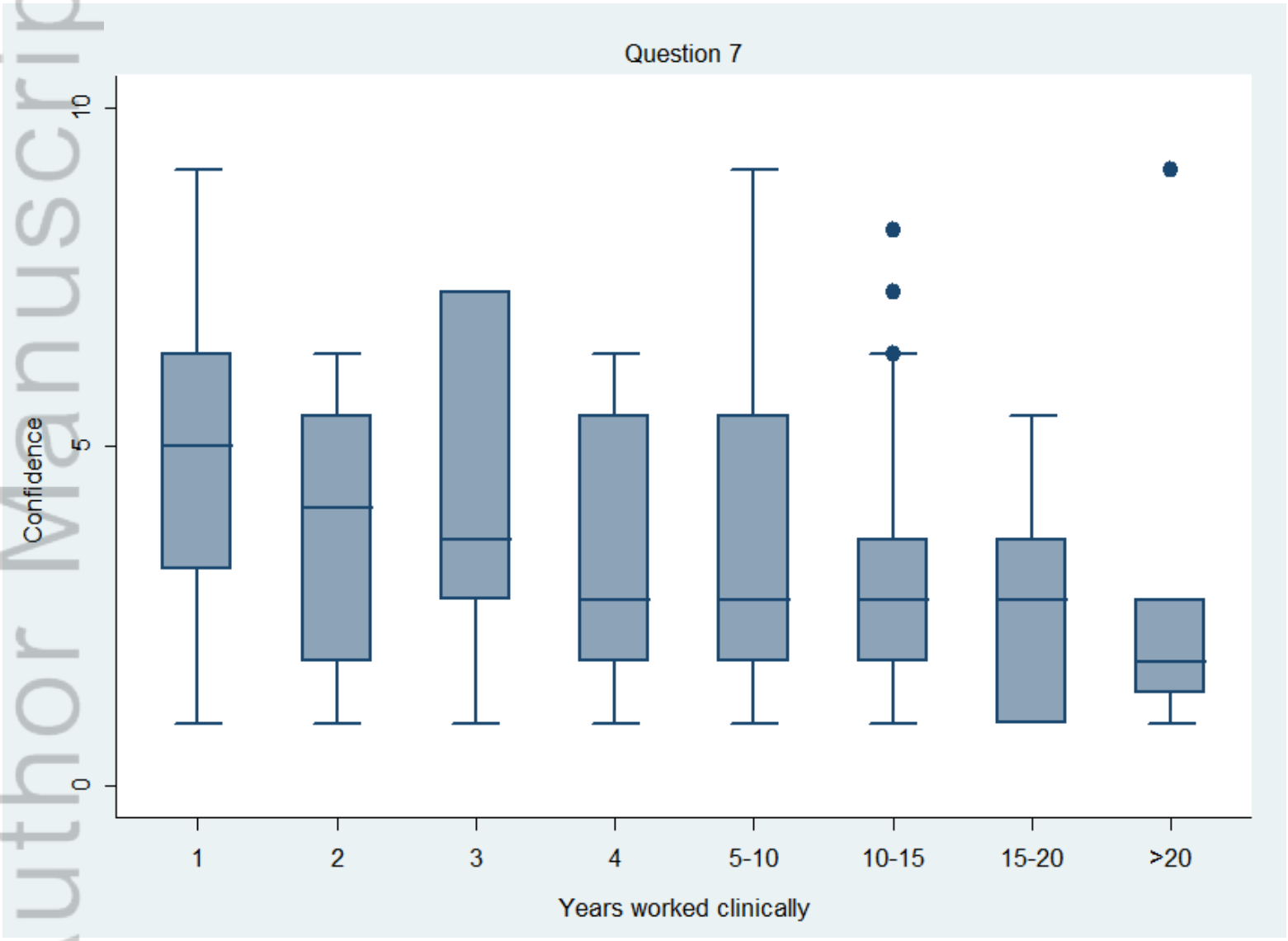
Author Manuscript



JEP_13001_F1-Q6.tif

This article is protected by copyright. All rights reserved.

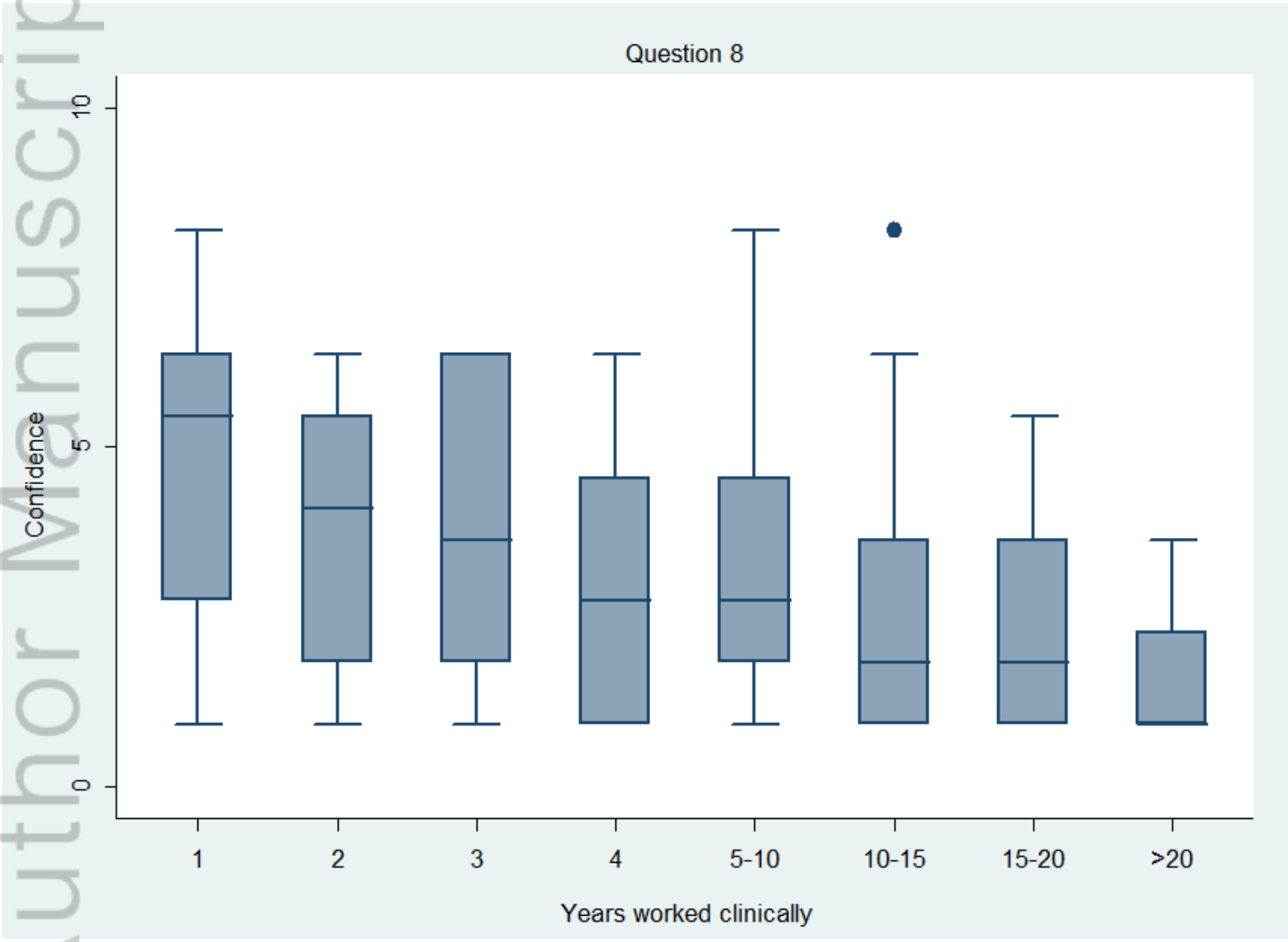
Author Manuscript



JEP_13001_F1-Q7.tif

This article is protected by copyright. All rights reserved.

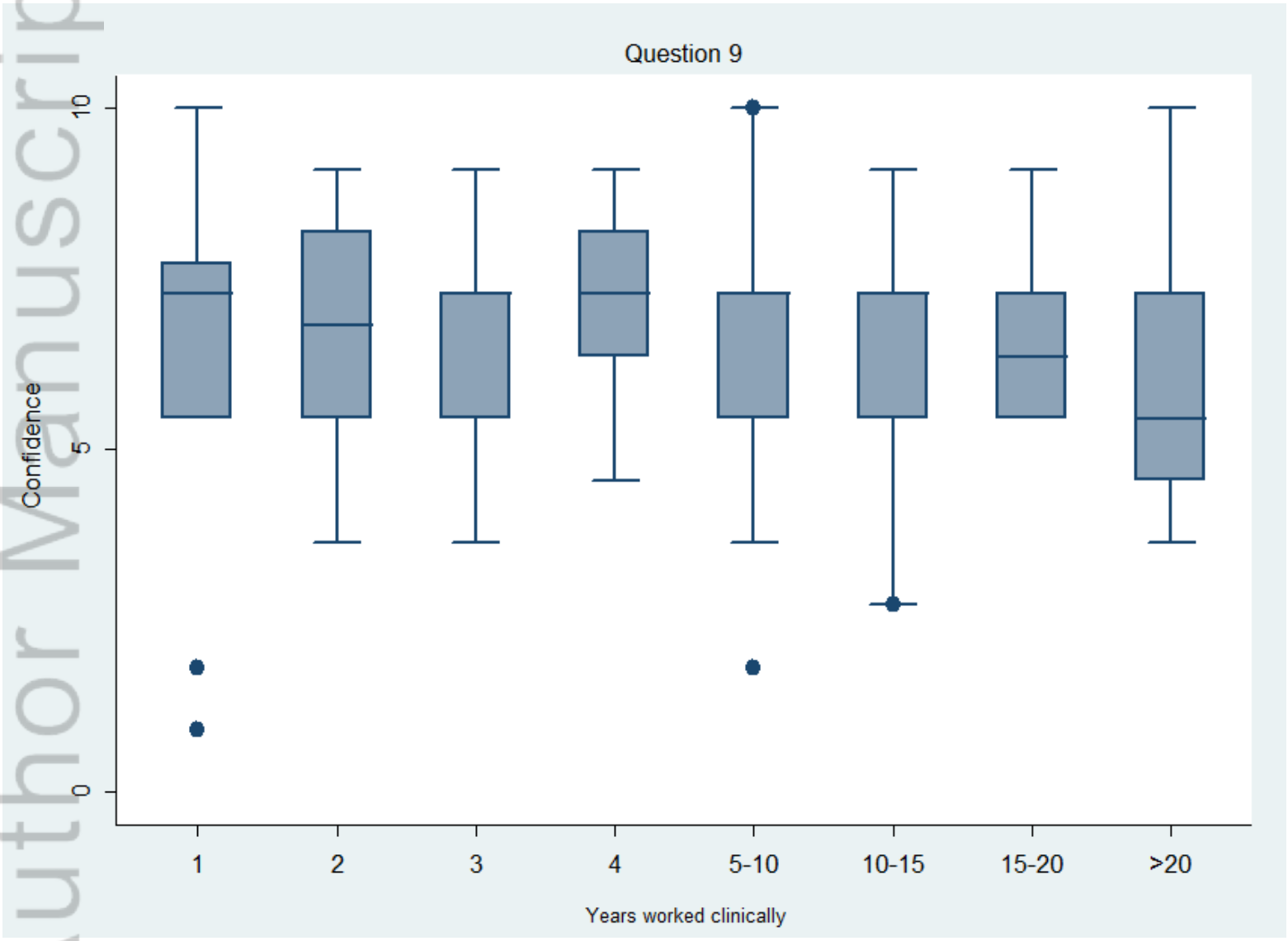
Author Manuscript



JEP_13001_F1-Q8.tif

This article is protected by copyright. All rights reserved.

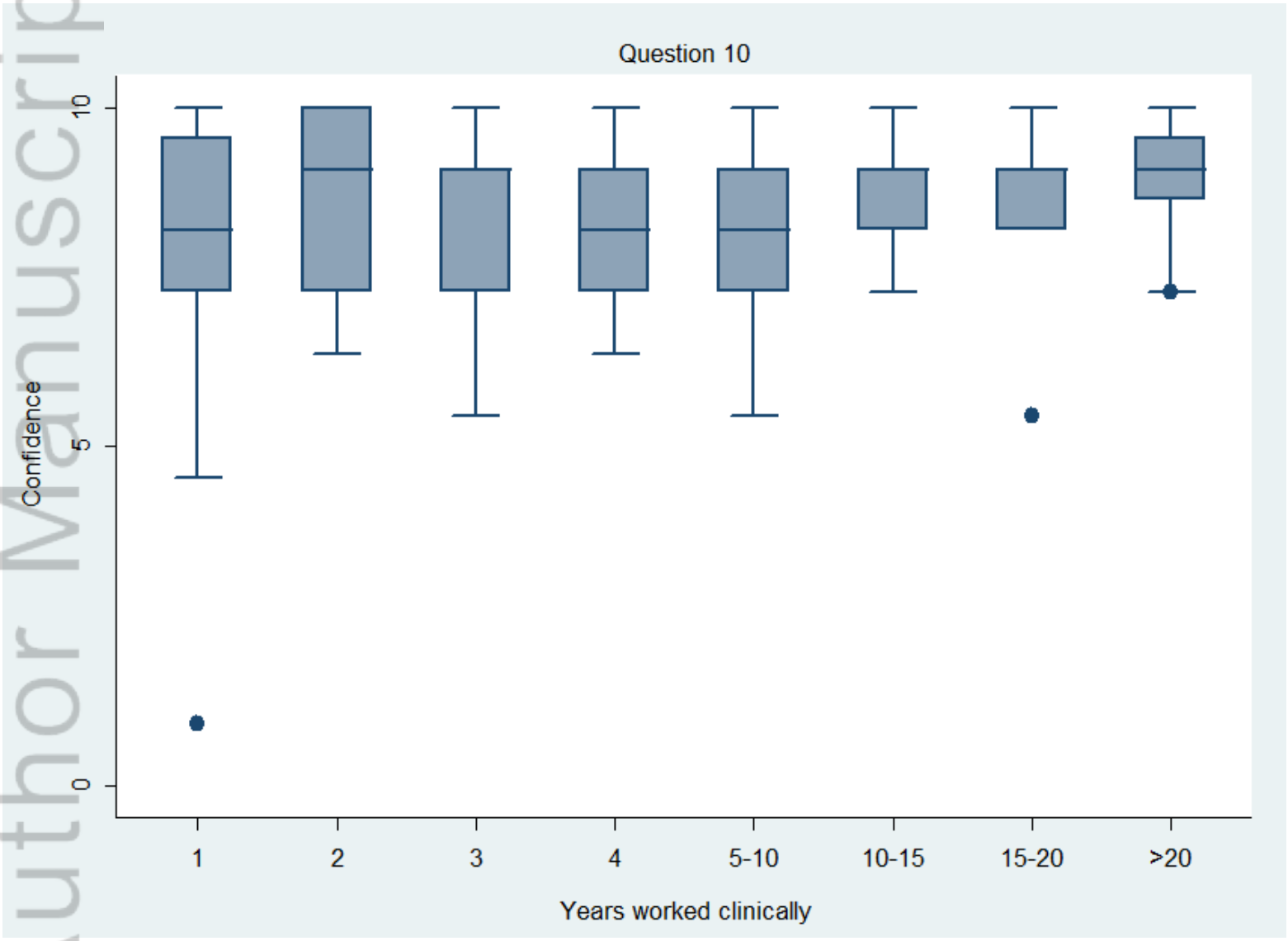
Author Manuscript



JEP_13001_F1-Q9.tif

This article is protected by copyright. All rights reserved.

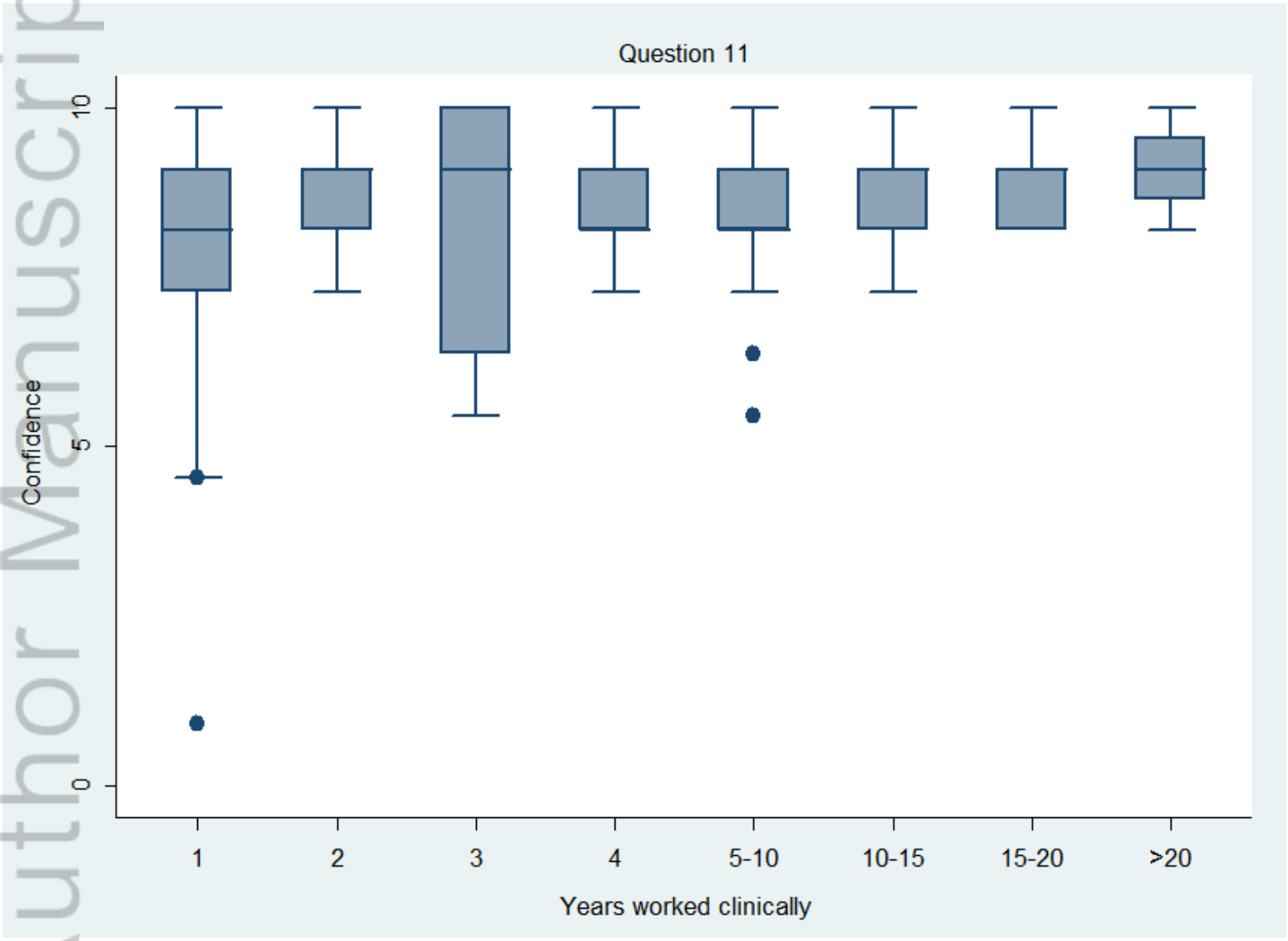
Author Manuscript



JEP_13001_F1-Q10.tif

This article is protected by copyright. All rights reserved.

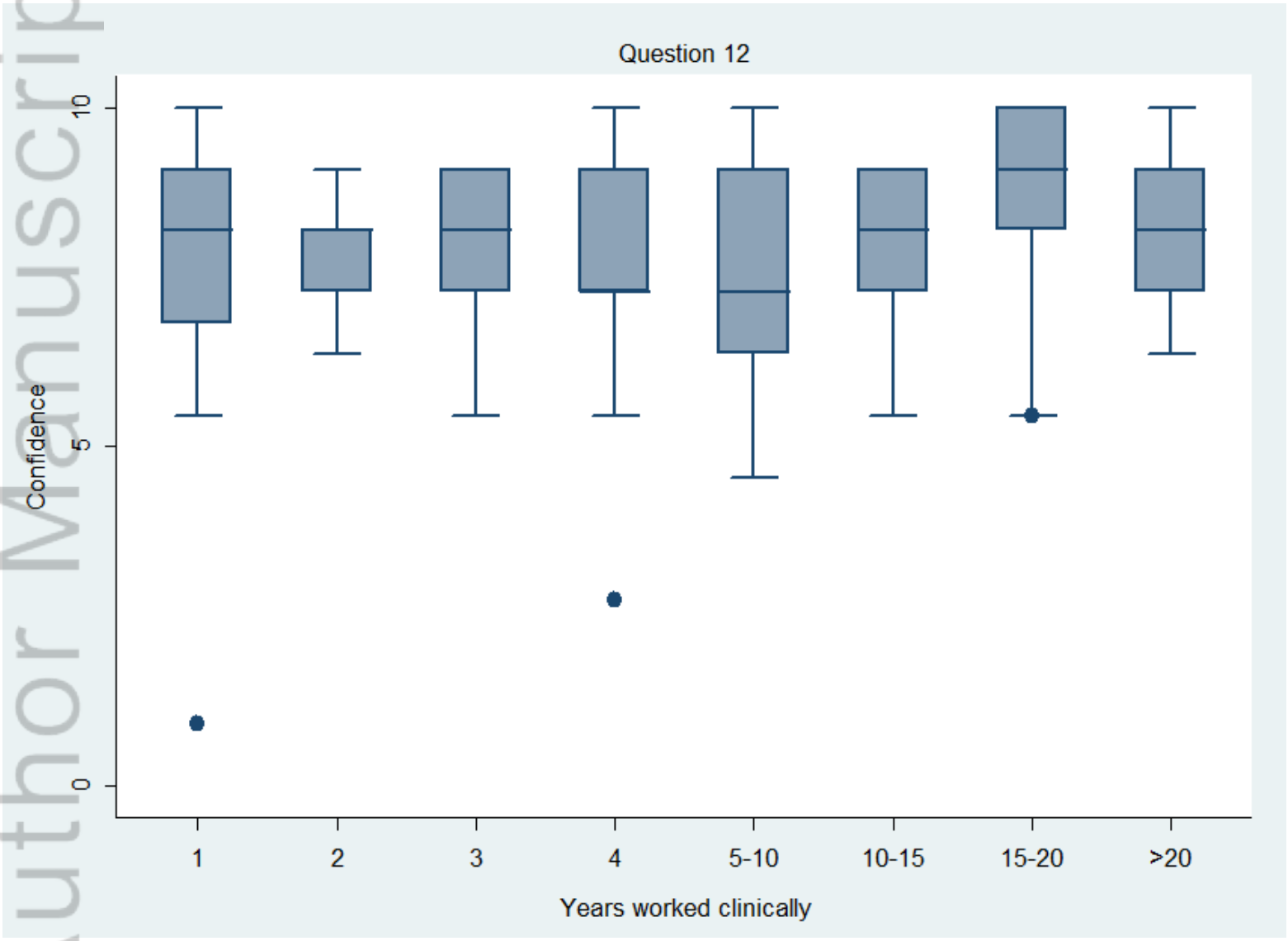
Author Manuscript



JEP_13001_F1-Q11.tif

This article is protected by copyright. All rights reserved.

Author Manuscript



JEP_13001_F1-Q12.tif

This article is protected by copyright. All rights reserved.

TABLE 1 RESPONDENT DEMOGRAPHIC INFORMATION

	PT (n=85)		OT (n=61)		SP (n=26)		SW (n=32)		DIET (n=47)		OTHER (n=37)		Total (n=288)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Age														
< 30	37	43.5	30	49.2	13	50.0	6	18.8	23	48.9	17	46.0	126	43.7
31-40	27	31.8	16	26.2	8	30.8	8	25.0	13	27.7	8	21.6	80	27.8
41-50	14	16.5	9	14.8	4	15.4	10	31.3	6	12.8	7	18.9	50	17.4
51-60	7	8.2	6	9.8	1	3.9	7	21.9	5	10.6	5	13.5	31	10.8
> 61	0	0	0	0	0	0	1	3.13	0	0	0	0	1	0.3
Gender														
Male	16	18.8	5	8.2	0	0	1	3.1	2	4.3	10	27.0	34	11.8
Female	69	81.2	56	91.8	26	100.0	31	96.9	45	95.7	27	73.0	254	88.2
Main work area														
Acute ward	27	31.8	21	34.4	9	34.6	14	43.8	27	57.5	4	10.8	102	35.4
Sub-acute inpatient	10	11.8	16	26.2	5	19.2	6	18.8	7	14.9	7	18.9	51	17.7
Hospital outpatient	16	18.8	3	4.9	2	7.7	0	0	4	8.5	15	40.5	40	13.9
Community	23	27.1	16	26.2	8	30.8	6	18.8	3	6.4	6	16.2	62	21.5
Other	9	10.6	5	8.2	2	7.7	6	18.8	6	12.8	5	13.5	33	11.5
Employment status														
Permanent FT	51	60.0	39	63.9	12	46.2	21	65.6	15	31.9	17	46.0	155	53.8
Permanent PT	21	24.7	14	23.0	9	34.6	11	34.4	18	38.3	13	35.1	86	29.9
Temp or casual FT	9	10.6	4	6.6	4	15.4	0	0	9	19.2	6	16.2	32	11.1
Temp or casual PT	4	4.7	4	6.6	1	3.9	0	0	5	10.6	1	2.7	15	5.2
Years worked clinically since graduation														
<5 years	23	27.1	21	34.4	10	38.5	9	28.1	19	40.4	13	35.1	95	33.0
5-10 years	24	28.2	17	27.9	8	30.8	8	25.0	10	21.3	9	24.3	76	26.4
10-15 years	15	17.7	10	16.4	6	23.1	8	25.0	9	19.2	5	13.5	53	18.4
15-20 years	8	9.4	5	8.2	0	0	3	9.4	1	2.1	6	16.2	23	8.0
>20 years	15	17.7	8	13.1	2	7.7	4	12.5	8	17.0	4	10.8	41	14.2
Highest grade currently working in														
1	11	12.9	18	29.5	6	23.1	7	21.9	12	25.5	8	21.6	62	21.5
2	28	32.9	18	29.5	6	23.1	13	40.6	21	44.7	6	16.2	92	31.9
3	35	41.2	21	34.4	11	42.3	7	21.9	10	21.3	11	29.7	95	33.0
4 or above	11	12.9	4	6.6	3	11.5	5	15.6	4	8.5	12	32.4	39	13.5
Year graduated from entry level health degree														
2009	1	1.2	0	0	2	7.7	3	9.4	4	8.5	1	2.7	11	3.8
2008	5	5.9	7	11.5	1	3.9	3	9.4	5	10.6	3	8.1	24	8.3
2007	5	5.9	3	4.9	2	7.7	0	0	3	6.4	2	5.4	15	5.2
2006	3	3.5	4	6.6	0	0	0	0	1	2.1	6	16.2	14	4.9
2005	8	9.4	3	4.9	5	19.2	3	9.4	5	10.6	0	0	24	8.3
2000-2004	24	28.2	19	31.2	6	23.1	6	18.8	11	23.2	9	24.3	75	26.0
1995-1999	14	16.5	7	11.5	6	23.1	6	18.8	6	12.8	5	13.5	44	15.3
1990-1994	8	9.4	3	4.9	2	7.7	2	6.3	5	10.6	6	16.2	26	9.0

This article is protected by copyright. All rights reserved.

Author Manuscript

Before 1990	17	20.0	15	24.6	2	7.7	9	28.1	7	14.9	5	13.5	55	19.1
Highest level of qualification obtained														
Bachelor's degree	36	42.4	38	62.3	18	69.2	22	68.8	16	34.0	12	32.4	142	49.3
Bachelor's degree Hons	16	18.8	10	16.4	1	3.9	2	6.3	6	12.8	2	5.4	37	12.8
Graduate certificate	9	10.6	1	1.6	1	3.9	2	6.3	2	4.3	2	5.4	17	5.9
Graduate diploma	2	2.4	2	3.3	0	0	0	0	4	8.5	1	2.7	9	3.1
Post-grad diploma	10	11.8	2	3.3	0	0	3	9.4	2	4.3	3	8.1	20	6.9
Master's Degree	11	12.9	8	13.1	6	23.1	3	9.4	17	36.2	9	24.3	54	18.8
PhD	1	1.2	0	0	0	0	0	0	0	0	8	21.6	9	3.1
Currently enrolled in higher qualification course														
Yes	6	7.1	5	8.2	2	7.7	4	12.5	2	4.3	5	13.5	24	8.3
No	79	92.9	56	91.8	24	92.3	28	87.5	45	95.7	32	86.5	264	91.7
Year graduated from most recent qualification														
2009	4	4.7	0	0	3	11.5	4	12.5	6	12.8	6	16.2	23	8.0
2008	9	10.6	11	18.0	1	3.9	3	9.4	6	12.8	6	16.2	36	12.5
2007	8	9.4	4	6.6	2	7.7	0	0	3	6.4	4	10.8	21	7.3
2006	4	4.7	4	6.6	0	0	1	3.1	1	2.1	7	18.9	17	5.9
2005	8	9.4	2	3.3	5	19.23	3	9.4	6	12.8	1	2.7	25	8.7
2000-2004	29	34.1	24	39.3	6	23.08	11	34.4	12	25.5	3	8.1	85	29.5
1995-1999	11	12.9	6	9.8	7	26.92	2	6.3	6	12.8	6	16.2	38	13.2
1990-1994	3	3.5	5	8.2	1	3.85	3	9.4	4	8.5	4	10.8	20	6.9
Before 1990	9	10.6	5	8.2	1	3.85	5	15.6	3	6.4	0	0	23	8

PT= physiotherapy; OT = occupational therapy; SP = speech and language therapy; SW = social work; DIET = dietetics / nutrition; OTHER = podiatry, psychology, radiation therapy; audiology; exercise physiology

Author Manuscript

This article is protected by copyright. All rights reserved.

Table 2 MULTIVARIABLE REGRESSION ANALYSIS FOR EBP CONFIDENCE, YEARS OF CLINICAL EXPERIENCE AND QUALIFICATIONS

	Years worked 2	Years worked 3	Years worked 4	Years worked 5-10	Years worked 10-15	Years worked 15-20	Years worked > 20	Bachelor Degree Honours	Graduate Certificate	Graduate Diploma	Post-graduate Diploma	Master's Degree	PhD
Identify clinical problems following patient assessment	0.94 (0.09 to 1.78), *p*=0.029*	0.59 (-0.19 to 1.37), *p*=0.139	1.07 (0.40 to 1.75), *p*=0.002*	0.95 (0.41 to 1.50), *p*=0.001*	1.14 (0.55 to 1.74), *p*=0.000*	1.37 (0.63 to 2.12), *p*=0.000*	1.28 (0.62 to 1.94), *p*=0.000*	0.50 (0.00 to 1.00), *p*=0.05	0.53 (-0.18 to 1.24), *p*=0.14	0.29 (-0.65 to 1.22), *p*=0.55	0.10 (-0.59 to .0), *p*=0.77	0.60 (0.16 to 1.04), *p*=0.008*	-0.26 (-1.21 to 0.69), *p*=0.60
Formulate a question based on the clinical problem to guide a literature search	0.52 (-0.73 to 1.78), *p*=0.41	0.21 (-0.95 to 1.38), *p*=0.72	0.35 (-0.66 to 1.36), *p*=0.49	0.32 (-0.50 to 1.14), *p*=0.44	0.43 (-0.46 to 1.32), *p*=0.34	0.71 (-0.40 to 1.82), *p*=0.21	0.11(-0.88 to 1.09), *p*=0.83	0.76 (0.02 to 1.57), *p*=0.04*	1.27 (0.22 to 2.33), *p*=0.02*	-0.08 (-1.46 to 1.31), *p*=0.91	0.55 (-0.48 to 1.59), *p*=0.30	1.40 (0.75 to 2.06), *p*=0.000*	1.59 (0.18 to 3.01), *p*=0.03*
Effectively search the relevant literature to address the question	-0.15 (-1.49 to 1.19), *p*=0.83	0.21 (-1.03 to 1.45), *p*=0.74	0.06 (-1.01 to 1.1), *p*=0.91	-0.82 (-1.69 to 0.05), *p*=0.06	-0.67 (-1.62 to 0.27), *p*=0.16	-0.54 (-1.72 to 0.64), *p*=0.36	-0.82 (-1.87 to 0.24), *p*= 0.13	0.85 (0.05 to 1.64), *p*=0.04*	1.31 (0.19 to 2.43), *p*=0.02*	0.04 (-1.43 to 1.52), *p*=0.96	0.06 (-1.04 to 1.17), *p*=0.91	1.46 (0.77 to 2.15), *p*=0.000*	2.74 (1.23 to 4.25), *p*=0.000*
Critically appraise the literature for reliability and relevance	-0.3 (-1.87 to 0.81), *p*=0.44	0.10 (-1.14 to 1.35), *p*=0.87	-0.30 (-1.38 to 0.77), *p*=0.58	-1.05 (-1.92 to -0.17), *p*=0.02*	-0.69 (-1.63 to 0.26), *p*=0.15	-0.72 (-1.90 to 0.46), *p*=0.23	-0.94 (-2.03 to 0.08), *p*=0.07	1.03 (0.24 to 1.82), *p*=0.01*	1.19 (0.07 to 2.32), *p*=0.04*	0.84 (-0.64 to 2.32), *p*=0.27	0.64 (-0.47 to 1.75), *p*=0.26	1.71 (1.014 to 2.40), *p*=0.000*	3.60 (2.09 to 5.11), *p*=0.000*
Critically appraise the reliability and validity of outcome measures	-0.96 (-2.37 to 0.45), *p*=0.18	-0.43 (-1.74 to 0.88), *p*=0.52	-0.72 (-1.85 to 0.41), *p*=0.212	-1.14 (-2.05 to -0.22), *p*=0.02*	-1.17 (-2.16 to -0.17), *p*=0.02*	-1.09 (-2.34 to 0.15), *p*=0.08*	-1.31 (-2.42 to -0.20), *p*=0.02*	1.12 (0.29 to 1.96), *p*=0.009*	1.38 (0.20 to 2.57), *p*=0.02*	0.99 (-0.57 to 2.55), *p*=0.21	0.80)-0.36 to 1.96), *p*=0.18	1.57 (0.84 to 2.30), *p*=0.000*	3.98 (2.39 to 5.56), *p*=0.000*
Identify strengths and weaknesses of different study designs	-0.07 (-1.45 to 1.31), *p*=0.92	-0.67 (-1.95 to 0.61), *p*=0.30	-0.39 (-1.49 to 0.72), *p*=0.49	-1.58 (-2.47 to -0.68), *p*=0.001*	-1.41 (-2.38 to -0.44), *p*=0.005*	-1.62 (-2.83 to -0.40), *p*=0.009*	-1.92 (-3.01 to -0.84), *p*=0.001	1.49 (0.68 to 2.31), *p*=0.000*	1.30 (0.14 to 2.46), *p*=0.03*	1.18 (-3.4 to 2.70), *p*= 0.13	1.11 (-0.03 to 2.24), *p*=0.06	2.00 (1.29 to 2.72), *p*=0.000*	4.35 (2.80 to 5.91), *p*=0.000*
Interpret results of statistical procedures e.g. t tests, correlations and χ^2	-1.04 (-2.66 to 0.59), *p*=0.21	-1.13 (-2.64 to 0.37), *p*=0.14)	-1.52 (-2.83 to -0.22), *p*=0.02*	-1.68 (-2.73 to -0.62), *p*=0.002*	-1.45 (-2.60 to -0.31), *p*=0.01*	-1.95 (-3.38 to -0.51), *p*=0.008*	-1.80 (-3.08 to -0.53), *p*=0.006	1.0 (0.04 to 1.6), *p*=0.04*	0.43 (-0.93 to 1.80), *p*=0.53	0.65 (-1.14 to 2.44), *p*=0.48	0.91 (-0.43 to 2.25), *p*=0.18	2.25 (1.41 to 3.09), *p*=0.000*	5.81 (3.98 to .63), *p*=0.000*
Interpret results of statistical	-0.38 (-1.97	-1.14 (-2.62	-1.45 (-2.73	-1.80 (-2.84	-1.79 (-2.2	-2.06 (-3.47	-2.01 (-3.26	0.61 (-0.34	0.68 (-0.66	0.54 (-1.22	1.25 (-0.07	1.92 (1.09	5.19 (3.39

This article is protected by copyright. All rights reserved.

Author Manuscript

procedures e.g. linear or logistic regression	to 1.22), *p*=0.64	to 0.34), *p*=0.13	to -0.17), *p*=0.03*	to -0.76), *p*=0.001*	to -0.67), *p*=0.002*	to -0.65), *p*=0.004*	to -0.75), *p*=0.002*	to 1.55), *p*=0.21	to 2.02), *p*=0.32	to 2.30), *p*=0.55	to 2.56), *p*=0.06*	to 2.75), *p*=0.000*	to 6.98), *p*=.000*
Appropriately apply evidence from literature to the individual patient	0.24 (-01.0 to 1.47), *p*=0.71	-0.11 (-1.25 to 1.04), *p*=0.86	0.48 (-0.50 to .47), *p*=0.34	-0.23 (-1.04 to 0.57), *p*=0.57	-0.15 (-1.02 to 0.72), *p*=0.73	-0.29 (-1.38 to 0.79), *p*=0.60	-0.47 (-1.44 to 0.49), *p*=0.34	0.85 (0.12 to 1.57), *p*=0.02*	1.43 (0.39 to 2.46), *p*=0.007*	-0.04 (-1.40 to 1.32), *p*=0.96	0.68 (-0.34 to 1.69), *p*=0.19	1.54 (0.90 to 2.18), *p*=0.000*	1.98 (0.60 to 3.37), *p*=0.005*
Understand your patient's needs and treatment preferences	0.63 (-0.25 to 1.51), *p*=0.16	0.25 (-0.57 to 1.06), *p*=0.56	0.47 (-0.24 to 1.18), *p*=0.19	0.26 (-0.31 to 0.83), *p*=0.37	0.66 (0.04 to 1.28), *p*=0.04*	0.54 (-0.24 to 1.32), *p*=0.17	0.56 (0.14 to 1.25), *p*=0.11	0.51 (-0.01 to 1.03), *p*=0.06	0.88 (0.14 to 1.62), *p*=0.02*	-0.48 (-1.45 to 0.50), *p*=0.34	0.26 (-0.47 to 0.99), *p*=0.48	0.63 (0.17 to 1.08), *p*=0.007*	0.15 (-0.85 to 1.14), *p*=0.77
Decide on an appropriate action in collaboration with the patient	0.77 (-0.07 to 1.61), *p*=0.07	0.24 (-0.53 to 1.02), *p*=0.54	0.76 (0.09 to 1.43), *p*=0.03*	0.57 (0.03 to 1.11), *p*=0.04*	0.82 (0.23 to 1.41), *p*=0.006*	0.89 (0.15 to 1.62), *p*=0.02*	0.9 (0.04 to 1.35), *p*=0.04*	0.55 (0.06 to .05), *p*=0.03*	0.69 (-0.01 to 1.39), *p*=0.054	-0.23 (-1.16 to 0.69), *p*=0.62	0.35 (-0.33 to 1.04), *p*=0.31	0.69 (0.25 to 1.12), *p*=0.002*	0.09 (-0.85 to 1.03), *p*=0.86
Continually evaluate the effect of your practice	0.20 (-0.89 to 1.29), *p*=0.71	0.22 (-0.79 to 1.23), *p*=0.67	0.12 (-0.76 to .99), *p*=0.79	0.03 (-0.68 to 0.74), *p*=0.93	0.49 (-0.28 to 1.25), *p*=0.21	0.49 (-0.47 to 1.45), *p*=0.32	-0.07 (-0.92 to 0.79), *p*=0.88	0.51 (-0.13 to 1.15), *p*=0.12	0.80 (-0.12 to 1.71), *p*=0.09	-0.18 (-1.38 to 1.03), *p*=0.77	0.601 (-0.30 to 1.50), *p*=0.19	0.47 (-0.10 to 1.03), *p*=0.10	0.19 (-1.04 to 1.41), *p*=0.77

Qualification reference value: bachelor degree; Years of clinical experience reference value: 1 year; Statistically significant results: *p* value set at <0.05 with 95% confidence intervals

Author Manuscript

This article is protected by copyright. All rights reserved.