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1 **COMMENTARY**

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# 2 Helping address the national research and 3 research capacity needs of Australian chiropractic: 4 introducing the Australian Chiropractic Research 5 Network (ACORN) project

6 Jon Adams<sup>1\*</sup>, Amie Steel<sup>1,2</sup>, Sungwon Chang<sup>1</sup> and David Sibbritt<sup>1</sup>

9 **Abstract**

10 Chiropractic is a popular health care choice in Australia and yet major gaps in our empirical understanding of this  
11 area of practice remain. Furthermore, while some research excellence exists, a largely uncoordinated approach to  
12 research activity and development has in effect led to silos of interest and a lack of strategic 'big-picture' planning  
13 essential to producing a sustainable research culture and capacity for the profession. This commentary identifies  
14 the significance of a number of key features - including a national, coordinated focus, and a rich engagement with  
15 the practitioner and patient base amongst others – arguably important to the future development of research and  
16 research capacity within Australian chiropractic. The design features and phases of the Australian Chiropractic Research  
17 Network (ACORN) project are also outlined. ACORN is one contemporary initiative specifically developed to address  
18 chiropractic's research and research capacity building needs and help grow a broad evidence-base to inform safe,  
19 effective patient care.

20 **Keywords:** Chiropractic, Research, Practice based research networks, Research capacity building

21 **Background**

22 Chiropractic is a popular health care choice in Australia  
23 as elsewhere constituting a major component of health  
24 care utilisation (estimated to be worth over \$3 M in out-  
25 of-pocket expenses in 2005 [1]) and attracting reports of  
26 good patient satisfaction [2-10]. Despite emerging re-  
27 search activity and developments within chiropractic in  
28 Australia and overseas [11-13], major gaps in our empir-  
29 ical understanding of this area of health care practice re-  
30 main. There is much room for the further development  
31 of a broad range of methods and disciplinary perspec-  
32 tives to help assess and advance the evidence-base for  
33 chiropractic care. Given the prevalence of chiropractic  
34 use in Australia, further research development - provid-  
35 ing insights of benefit for practitioners, patients and  
36 policymakers - is essential to ensuring effective, safe,  
37 coordinated chiropractic care and provision [14].

38 A key challenge that has faced research of chiropractic 38  
39 in Australia to date has been the piecemeal and often 39  
40 largely uncoordinated nature of research activity. While 40  
41 some research excellence and emerging evidence exists, a 41  
42 largely uncoordinated approach has in effect led to silos of 42  
43 interest and a lack of strategic 'big-picture' planning essen- 43  
44 tial to producing a sustainable research culture for the 44  
45 profession [15]. Following the lead of other health profes- 45  
46 sional groups it is vital that Australian chiropractic invest 46  
47 substantial effort and resources to facilitate a coordinated 47  
48 approach to producing a sustainable culture of research 48  
49 [11,12,15-19]. A failure to significantly invest in research 49  
50 capacity building runs the very real risk of substantially 50  
51 limiting the prospects of the profession and its research 51  
52 base for the foreseeable future [16-20]. 52

53 **Discussion**

54 **Key features essential to future development of chiropractic 54  
research and research capacity building 55**  
55 In order to directly and successfully address the contem-  
56 porary research and research capacity building needs of  
57

\* Correspondence: [jon.adams@uts.edu.au](mailto:jon.adams@uts.edu.au)

<sup>1</sup>Australian Research Centre in Complementary and Integrative Medicine,  
Faculty of Health, University of Technology, Sydney, Australia  
Full list of author information is available at the end of the article

58 Australian chiropractic and to ensure necessary credibility and strength in design, there is an arguably urgent  
59 need for initiatives to build upon a number of interrelated, distinct features. In particular, we would argue, it  
60 is essential such initiatives wherever possible: be based  
61 upon a critical, non-partisan research approach; adopt and  
62 build upon rigorous health and medical research methods  
63 and designs; be coordinated, broad and multidisciplinary  
64 in research focus; be national in design and scope; be longitudinal and sustainable providing short term, mid-term  
65 and long term outcomes as well as helping build a wider  
66 incremental program of research; incorporate practitioner  
67 engagement and research capacity building wherever possible;  
68 reflect and connect with the clinical and practice  
69 realities of contemporary chiropractic and wider health  
70 care in order to ensure translation and impact of results  
71 for practitioners and patient care; and be inclusive and  
72 research network building (housing an ability to facilitate,  
73 promote and advance research networks where already  
74 established and help encourage and grow networks and  
75 research activity elsewhere as necessary).

#### 79 **One new strategy of response: introducing the ACORN 80 project**

81 The Australian Chiropractic Research Network (ACORN)  
82 project is one contemporary initiative which has been  
83 designed and launched in direct response to these re-  
84 search and research capacity building needs. In the  
85 following sections of this paper, the overarching design  
86 and phases of the ACORN project will be explained  
87 along with a discussion of the specific ways in which the  
88 project will address the essential research and research  
89 capacity building issues facing Australian chiropractic.

90 ACORN is the first long-term, national project built  
91 upon a Practice-Based Research Network (PBRN) design  
92 to examine chiropractic care in Australia. A PBRN de-  
93 sign has been previously utilised in a range of health  
94 care fields including general practice [21-23], pharmacy  
95 [24] and dentistry [25]. Chiropractic PBRN work has  
96 developed outside Australia [26] and, while not constit-  
97uting a PBRN, practice-based research has also previ-  
98ously been undertaken in Australian chiropractic on a  
99 regional level [4,27]. PBRN studies act as 'research  
100 laboratories' for health and medical care [22] drawing  
101 upon groups of practitioners/practices (small or large in  
102 number) in order to systematically answer questions that  
103 arise from clinical practice [28] as well as undertake  
104 research of relevance to both grass-roots practitioners  
105 and patient care [29]. The notion of a PBRN being sus-  
106 tainable and capacity building has also been highlighted  
107 [30,31]. Examples of the type of issues that have previously  
108 been investigated via PBRN designs include an examin-  
109 ation of a range of information sources practitioners draw  
110 upon to inform their clinical decision-making [32] and

the comparative effectiveness of different models of  
111 health care [33]. A PBRN is extremely well positioned  
112 to help address research questions around professional  
113 standards of practice and clinical characteristics and  
114 behaviours and can provide an opportunity for more  
115 rigorous sub-studies to examine the efficacy of particu-  
116 lar protocols within particular patient sub-groups of  
117 *direct relevance* to frontline practice settings [30].

The ACORN project, funded by the Chiropractors' Association of Australia, has been independently designed and is independently led and conducted by the Australian Research Centre in Complementary and Integrative Medicine (ARCCIM), Faculty of Health, University of Technology Sydney (UTS). The project will provide extensive data collection and analysis as well as develop essential national infrastructure for future research on chiropractic. The ACORN project draws upon and promotes critical multidisciplinary, longitudinal investigation based upon rigorous scientific design and methods, strongly encourages (and relies upon) collaborative involvement from across the chiropractic profession – both in terms of practitioners and researchers/research groups – and introduces a national coordinated agenda for chiropractic research that is translational in output and reflective of practice realities. While the project is capable of facilitating a diverse range of research sub-studies and addressing a very broad range of distinct but interrelated research questions, the platform focus of the ACORN project is upon examining issues around chiropractic best practice, safety and cost-effectiveness. The ACORN project will employ a diverse dissemination strategy to ensure empirical findings reach practitioner, patient, researcher and policymaker audiences. Dissemination of the empirical findings from the ACORN project will include publication in relevant national and international peer-reviewed journals as well as practitioner-friendly webpage dissemination.

The ACORN project has three initial core phases - all covered by the initial period of funding - that will be implemented over the first three years of the project (with a view to establishing a longer-term, programmatic initiative to be maintained over a much longer period). *Phase One* is focused upon the design, preparation and promotion activities. *Phase Two* involves distribution of a brief (2 page) baseline practitioner questionnaire, practitioner recruitment for the wider project (establishing a national chiropractor database), the launch of an Expression of Interest (EOI) round and initial approval for nested sub-studies and PhD proposals. Finally, *Phase Three* will facilitate additional and ongoing nested sub-study activity available to senior researchers and their teams and PhD development opportunities alongside maintaining the national chiropractor database. The ACORN project is available to those already developing and

165 conducting chiropractic research to take advantage of a  
166 national chiropractic network to address a broad spectrum  
167 of related research questions.

168 In the remaining sections of this paper we outline the  
169 three phases of the ACORN project providing a general  
170 overview of the project's approach and methods and  
171 highlighting how the project incorporates key design  
172 features which ensure short term and long term critical  
173 investigation and evaluation as well as the capacity  
174 building necessary to enable the profession and field to  
175 develop and prosper.

176 ***Phase one: ethics, design, preparation and promotion***

177 In this initial phase of ACORN, the project Steering  
178 Committee is focused upon a number of platform-  
179 building tasks. It is imperative for a national-scale PBRN  
180 project such as ACORN to attract as high a response  
181 rate as possible [30] from the target population (*all* prac-  
182 tising chiropractors across Australia) and critical to this is  
183 a well-developed promotion campaign. In response, Phase  
184 One of the project includes an extensive promotions strat-  
185 egy to be administered via regional and national events in  
186 order to reach and engage as many of the registered  
187 practising chiropractors across Australia as possible. To  
188 this end, ACORN senior Chief Investigators will present  
189 introductory ACORN project talks at relevant venues  
190 and events (including regional and national Executive  
191 and Membership Meetings, AGMs and research-focused  
192 events) and provide regular updates and information brief-  
193 ings via relevant newsletters (e.g. via Chiropractor's Asso-  
194 ciation of Australia and Chiropractic and Osteopathic  
195 College of Australasia) throughout 2014 and early 2015.  
196 Further information regarding the ACORN project will  
197 also be available via the project webpage [34].

198 Drawing upon previous relevant research in Australia  
199 and overseas [26,27] the ACORN project team will de-  
200 sign, pilot and finalise a brief 2 page questionnaire which  
201 will be administered in Phase Two to collect baseline  
202 practitioner and practice data regarding chiropractor  
203 characteristics, practice characteristics, patient manage-  
204 ment and case-load mix amongst other topics. All the  
205 initial phase design features of the ACORN project will  
206 also be subject to ethical review and approval by relevant  
207 University Ethics Committees.

208 ***Phase two: administering a baseline chiropractor survey,  
209 establishing a national chiropractor research database and  
210 launching an expression of interest (EOI) call***

211 An initial focus of Phase Two of the project will be to  
212 administer the questionnaire instrument designed and fina-  
213 lised in Phase One. The questionnaire will be as short as  
214 possible (maximum of 2 pages) to encourage and maximise  
215 a good response rate. Initial pilot-testing shows the ques-  
216 tionnaire will take approximately 6–8 minutes to complete.

The questionnaire will include examination of practitioner's  
217 demographics, their practice characteristics including the  
218 frequency of patient types and presentations as well as the  
219 techniques and methods of care employed. The survey  
220 will be administered to *all* registered chiropractors across  
221 Australia (via both electronic and hard copy mail out) and  
222 will constitute the first national-scale mapping of chiroprac-  
223 tors' clinical management and patient care undertaken in  
224 Australia. In addition, the national mapping of chiropractic  
225 provided from the brief questionnaire will also be critical to  
226 establishing a broad data resource with which others can  
227 build, value-add, examine specific lines of investigation and  
228 address additional research questions.

229 Alongside the 2 page questionnaire, chiropractors will  
230 also receive an additional invitation to participate in the  
231 longer-term ACORN project. The contact details of each  
232 consenting chiropractor will be added to a secure data-  
233 base (to be securely housed at ARCCIM, UTS) which  
234 will be an ongoing resource for further research investi-  
235 gation via approved EOI applications (see below). The  
236 ACORN project has been assessed for up to 12.5 formal  
237 learning hours and the allocation of Continuing Profes-  
238 sional Development hours is subject to an individual's  
239 level and amount of engagement.

240 Phase Two will also include an initial call for EOIs to  
241 be conducted by other interested researchers, practi-  
242 tioners and research teams/groups who may wish to ac-  
243 cess the ACORN chiropractor database for the purpose  
244 of developing and conducting nested sub-studies. Such  
245 EOIs regarding sub-study proposals will follow a formal  
246 application process and will be peer-reviewed by the  
247 ACORN Steering Committee headed by Senior ARC-  
248 CIM academics with a view to ensuring appropriate  
249 standards of scientific validity, feasibility and design/  
250 methodological expertise are maintained.

251 Alongside accommodating more senior researchers,  
252 sub-study applications which primarily build upon or  
253 contain PhD studentships/study are also strongly en-  
254 couraged. Indeed, all established chiropractic depart-  
255 ments and research groups are encouraged to seek  
256 additional funding to facilitate separate PhD student-  
257 ships/stipends which can be nested in the ACORN pro-  
258 ject and thereby take advantage of the infrastructure  
259 established by the project. Sub-studies suitable for EOI  
260 submission can include a vast array of possible designs  
261 and features including (but not restricted to): qualitative,  
262 quantitative and mixed-method research design; data  
263 collected via both chiropractors and/or their patients;  
264 and cross-sectional as well as longitudinal studies.

265 ***Phase three: facilitating chiropractor and patient Sub-studies,  
266 PhD development and further funding opportunities***  
267 In Phase Three the EOI call will remain open to encourage  
268 ongoing sub-study development and applications. The  
269

270 ACORN project database provides an ideal platform for  
271 nesting future PhD projects and can therefore be har-  
272 nessed and utilised as a rich and valuable resource for doc-  
273 toral level studies that will ultimately build chiropractic  
274 research capacity. In addition, the core ACORN project  
275 research team at ARCCIM will prepare further funding  
276 applications and seek input from relevant and interested  
277 partners to support applications for Federal Government  
278 research funding where possible. With this in mind, the  
279 ARCCIM will also explore opportunities to maintain and  
280 regularly update the ACORN practitioner database provid-  
281 ing a valuable and ongoing resource for research and  
282 research capacity building in chiropractic over the three  
283 initial years of funding and beyond.

284 **Addressing key needs for research and research capacity  
285 building via the ACORN project**

286 The ACORN project has been designed to directly address  
287 the key features essential to growing the broad evidence  
288 base and research capacity of Australian chiropractic  
289 (outlined earlier). These features are now outlined in  
290 more detail below.

291 ***Adopting a critical, non-partisan research approach built  
292 upon rigorous health and medical research methods and  
293 designs***

294 Chiropractic, like other areas of health care practice  
295 located beyond conventional medicine, has generated  
296 emotive debate and commentary over recent years  
297 [35,36]. Such debate has tended to be a barrier to the  
298 scientific, rigorous examination and assessment of chiro-  
299 practic within the Australian health care system. Indeed,  
300 there is an urgent need for chiropractic to be subject to  
301 critical investigation utilising rigorous designs and  
302 methods in order to promote a balanced, non-partisan  
303 approach to empirical study and appraisal – a situation  
304 no different to that demanded of all health care profes-  
305 sions regardless of origins or orientation [37]. Such a  
306 balanced, non-partisan approach is at the very core of  
307 the ACORN project which has been designed and is  
308 independently led and conducted by a team of senior  
309 multi-disciplinary health care researchers (research  
310 methodologists) and yet inclusive of field-practitioner  
311 participation and input to assist in making the project  
312 more relevant to frontline practice. The ARCCIM team  
313 have extensive training and experience in successfully  
314 applying robust designs and methods to the critical  
315 study of health care topics (across complementary  
316 medicine, conventional health care and beyond) as well  
317 as established track records in attracting a significant  
318 portfolio of National Health and Medical Research Council  
319 (NHMRC) and Australian Research Council (ARC) grant  
320 and Fellowship funding.

***Accommodating a coordinated, broad, multidisciplinary  
research focus***

321 It is important that chiropractic research, at this signifi-  
322 cant juncture in its development, be co-ordinated and suf-  
323 ficiently broad (both disciplinarily and methodologically)  
324 in its focus as to ensure a suitable platform to accommo-  
325 date as many sub-studies as possible. While increasing  
326 expertise and detailed engagement with specific areas of  
327 chiropractic care is wanting, the immediate task facing this  
328 research field is guaranteeing the research activity of today  
329 provides the most efficient use of resources and energy  
330 for future endeavours [38]. A PBRN design such as that  
331 adopted in the ACORN project is an excellent vehicle to  
332 ensure this is achieved within the real-life setting of front-  
333 line practice [39].

334 At the heart of the ACORN project is a multi-disciplinary  
335 approach incorporating a wide spectrum of clinical, public  
336 health and health services research methods, designs  
337 and disciplinary-based perspectives. The ACORN pro-  
338 ject (especially Phases Two and Three via the EOI  
339 process) encourages the conduct of a multitude of  
340 nested-study designs which can include observational  
341 studies and experimental studies.

***First national scale, longitudinal project of its type in Australia***

344 It is vital that any serious attempt to build a significant  
345 chiropractic research agenda and culture that will have  
346 substantial influence and impact within and beyond the  
347 profession be designed around a study of national scale.  
348 ACORN has been designed to provide the first national  
349 research project of its type in Australian chiropractic.  
350 Through recruitment from registered chiropractors across  
351 Australia, ACORN will be able to provide the first  
352 national-scale mapping of chiropractors' clinical manage-  
353 ment and patient care undertaken in Australia. This scope  
354 of study also provides excellent opportunity for analyses to  
355 be large scale (national) as well as regionally and locally  
356 significant – the national data collected can also be ana-  
357 lysed in terms of States/Territories, regional areas (i.e. a  
358 major urban area) or based upon urban/rural/remote  
359 settings amongst other criteria.

360 Similarly, PBRN designs such as that adopted by the  
361 ACORN project allow excellent infrastructure to conduct  
362 longitudinal analyses whereby patients and treatment out-  
363 comes are tracked over specific time periods. Such work is  
364 particularly important in addressing questions around the  
365 effectiveness of different treatments and will be strongly  
366 encouraged in terms of partnering and/or outside teams  
367 of investigators looking to submit sub-study proposals.

***Sustainable and research capacity building***

369 Essential to harnessing and promoting a well-developed  
370 research culture within chiropractic is a commitment to  
371 ensuring research activity is more than short-term and

373 involves developing the research training and careers of  
 374 those within chiropractic. Chiropractic, not dissimilar to  
 375 other professions outside of conventional health care, is  
 376 in much need of research growth starting with expanding  
 377 the pool of people with PhDs in the field [38]. In  
 378 response, the ACORN project actively encourages and  
 379 comfortably accommodates PhD candidates and other  
 380 early career researchers via the EOI process. Crucially,  
 381 the ACORN project also facilitates not only immediate  
 382 but also mid to long-term research activity around  
 383 chiropractic in much needed areas - the ACORN project  
 384 effectively establishes the necessary infrastructure upon  
 385 which others can build and value-add.

386 The EOI and nested sub-study design also provide ex-  
 387 cellent opportunity for chiropractors to engage in con-  
 388 ducting empirical research study. As previous PBRN  
 389 studies have illustrated, so long as time and effort is  
 390 taken to promote closer researcher-practitioner relations  
 391 and develop research collaborations where practitioners  
 392 are mentored by senior researchers, a PBRN such as the  
 393 ACORN project can comfortably accommodate those  
 394 chiropractors looking to develop their research experi-  
 395 ence and skills [30].

#### 396 ***Incorporating practitioner engagement and reflective of 397 practice realities***

398 A PBRN design such as that adopted within the ACORN  
 399 project necessitates that the research perspective be dir-  
 400 ectly linked to and contextualised within everyday practice  
 401 activity and behaviours. The ACORN project design –  
 402 drawing upon data from both grass-roots practitioners  
 403 and their patients – will ensure that the research focus  
 404 is of direct relevance to (and thereby impact upon)  
 405 practice realities. As with other quality health research,  
 406 the ACORN project will accommodate an ability to  
 407 approach the practitioner and/or patient as *a partner/partners* in investigations and the project acknowledges  
 408 the essential engagement and involvement of both chi-  
 409 ropractors and their patients in ensuring the project  
 410 and project findings are translational and impactful for  
 411 patient care. The ACORN project provides a national  
 412 platform for chiropractors in the field to directly parti-  
 413 cipate within significant research projects, which can  
 414 influence the future of the profession in Australia.  
 415

#### 416 ***Encouraging inclusivity and research network building***

417 In order to maximise and help support the pockets of  
 418 research excellence and activity already established around  
 419 chiropractic, the ACORN project houses a fundamentally  
 420 *inclusive* research design. The success of the project is sig-  
 421 nificantly dependent upon the engagement and commit-  
 422 ment of interested researchers and research teams (which  
 423 can, and in many cases should, include key practitioner  
 424 collaborators) beyond the core ARCCIM investigators.

Indeed, the EOI process has been developed to encourage 425  
 partnership and input beyond the immediate ARCCIM 426  
 team and the ACORN project actively encourages the 427  
 submission of nested sub-studies led by qualified and 428  
 interested groups/parties across Australia and/or on the 429  
 international stage. 430

#### 431 **Conclusion**

It is imperative that chiropractors and chiropractic pro- 432  
 fession, like all health care practitioners and practices 433  
 currently available and utilised by Australians, be subject 434  
 to sufficient critical, rigorous examination and assessment. 435  
 While addressing the many research gaps on this topic via 436  
 a coordinated effort has obvious and far-reaching benefits 437  
 for chiropractors and the wider profession in Australia, 438  
 the ACORN project also constitutes a significant initiative 439  
 for others beyond the profession. To examine and assess 440  
 fundamental aspects and features of contemporary chiro- 441  
 practic will produce insights of benefit to all interested 442  
 and engaged in researching, practicing and managing 443  
 evidence-based, safe and effective patient care. 444

Addressing the research and research capacity building 445  
 needs of Australian chiropractic will certainly require 446  
 long-term commitment and engagement from a number 447  
 of stakeholders across the profession (especially practi- 448  
 tioners and researchers). However, the establishment of 449  
 the ACORN project constitutes a solid national platform 450  
 for helping address these needs in an inclusive manner 451  
 which ensures investigations can accommodate an ap- 452  
 propriate wealth of interests, designs and expertise as 453  
 well as provide an evidence-base assessment and reflect 454  
 the grass-roots features of chiropractic patient care. 455

#### 456 **Competing interests**

The authors declared that they have no competing interests. 457

#### 458 **Authors' contributions**

JA designed and produced first draft of the paper. JA, AS, SC and DS all 459  
 contributed substantial revisions to the manuscript, read and approved final 460  
 manuscript prior to submission. 461

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#### 465 **Author details**

<sup>1</sup>Australian Research Centre in Complementary and Integrative Medicine, 466  
 Faculty of Health, University of Technology, Sydney, Australia. <sup>2</sup>Office of 467  
 Research, Endeavour College of Natural Health, Brisbane, Australia. 468

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