

Perceptions of how education has prepared UK Veterinary Nurses for their professional role

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45
46
47
48
49

50 **Abstract**

51

52 Assessing how prepared individuals are for a career pathway is essential if job
53 satisfaction and retention are to be considered within an industry. Determining how
54 training prepares Registered Veterinary Nurses will therefore provide employers and
55 educators with valuable information about how education is meeting expectations and
56 demands. A positivist, quantitative approach led to a cross-sectional study via an
57 online questionnaire reaching 141 Registered Veterinary Nurses. Participants were
58 demographically profiled prior to differences being determined between data sets
59 using the Kruskal Wallis H and Mann Whitney U tests. All educational routes and job
60 roles reported different scores for preparedness for the duties carried out, however,
61 the main differences were between degree and diploma routes with diploma route
62 students suggesting that they were prepared in more subject areas. A variety of
63 qualification routes are available to a veterinary nurse in the UK, which must be
64 considered when reviewing preparedness and making suggestions for educational
65 reform. Further research is needed to support these findings in relation to the role of
66 the educator, the employer and veterinary nurse to allow for an unbiased
67 understanding of preparedness which could have links to job satisfaction.

68

69 **Introduction**

70

71 In many industries, retention of employees is a much-debated entity that is often
72 discussed at length with little resolution.¹⁻³ Before investigation into dissatisfaction or
73 lack of retention within an industry there must be an acceptance that career
74 preparation can affect workplace success and therefore, this should be a priority for
75 research. Globally, veterinary nurses (VNs) are recognised under different titles,
76 mainly as veterinary nurses or veterinary technicians, but can also be referred to as
77 veterinary paraprofessionals. It is important to remember that VNs are professionals
78 in their own right developing skills, knowledge and expertise that veterinary surgeons
79 do not.⁴ Actual figures of practicing VNs in the United Kingdom are difficult to establish,
80 because a proportion of those remaining on the Register have relocated to non-clinical
81 areas of the profession. However, in 2018 15782 VNs were Registered with the Royal
82 College of Veterinary Surgeons (RCVS)⁵⁻⁷ but annually, 5.8% of these nurses are
83 relinquishing their Registered Veterinary Nurse (RVN) status with factors such as lack
84 of job satisfaction being identified.⁸⁻¹¹ Assessing what is causing RVNs to leave clinical
85 work is paramount to the future of VNs globally because similar attributes of
86 dissatisfaction have been presented by veterinary technicians.¹²⁻¹⁵ Research from
87 New Zealand and Australia determined that perceptions of education and
88 subsequent employment were affected by factors such as career progression,
89 professional recognition and a competitive salary which is relevant to UK educators
90 who also support individuals who have the same skill sets.^{15,16} Whilst veterinary
91 technicians surveyed in the United States of America have suggested that they often
92 do not feel that the skills they learn are relevant to those needed in practice.¹³

93

94 Human nurses demonstrate traits such as empathy and altruistic ideals when asked
95 about their reasons for entering the nursing profession, whilst RVNs cite the ability to
96 work with animals, the variety of the workload, building client relationships and making
97 a difference.¹⁷ Retention rates of employees, can be affected by unexpected and
98 excessive demands within workload, therefore recognising how individuals feel they
99 were prepared for their roles may open lines for understanding how RVNs can be

100 supported.^{9,10,18,19} Support which can then avoid detrimental effects on animal health
101 and welfare, staff moral and the available banks of experienced VNs.

102

103 Comparisons are often made between human nurses and VNs which highlight the
104 differences in their professional recognition, with training to become a human nurse
105 predating the 19th century, whilst veterinary nursing was only recognised as an official
106 profession in the UK in 1961.^{20,21} Progress is being made to overcome challenges
107 faced by VNs globally by organisations such as the RCVS, The British Veterinary
108 Nursing Association (BVNA) and the formation of the International Veterinary Nurses
109 and Technician Association in 1991.²² Within human nursing dissatisfaction of a role
110 can be linked to an individual's readiness to carry out the job, however, with RVNs this
111 has not been investigated.¹³ Reasons for discontent in VN roles have been highlighted
112 as: 1) long work hours 2) physical work environment hazards 3) emotional demands
113 from owners 4) social isolation 5) salary scale 6) excessive work load 7) euthanasia
114 related issues and 8) perceived levels of support from management and co-workers,
115 but little research centres on why these may have become reasons originally,
116 highlighting the need to focus on training and work preparation.^{17,23,24} It is important to
117 ensure that individuals feel they have been prepared for the emotional aspects of the
118 job to allow for competence in all areas, not just in the physical aspects.²⁵
119 Throughout a VNs education the importance of subject areas such as anaesthesia and
120 pharmacy to the future career of a VN are apparent, obligations lie with RVNs,
121 educators and employers to ensure that VNs are also aware of the importance of
122 mental well-being when preparing for the career.^{24,26}

123

124 Since the increasing uptake of undergraduate VN courses in the UK, closer
125 examination is needed on the knowledge of education effectiveness to facilitate
126 understanding before focusing on areas such as well-being and job satisfaction.^{24,27,28}
127 Consideration of the role of the RVN would support organisations such as the BVNA
128 and RCVS in ensuring that VNs are being prepared for the diverse roles they are
129 employed for. Having a well-rounded understanding of a career pathway is important
130 and employers, employees and educators need to be clear on the expectations and
131 realities of a profession and the perceived image that the profession produces.^{19,29,30}
132 Within the arts, educators are advised to support their students to ensure that they are
133 only embarking on a career path that they have a deep-seated passion for, to try
134 and prevent a level of disillusionment whilst the student progresses and before they
135 enter their chosen profession.²⁹ Suggestions to incorporate topics, such as leadership,
136 interpersonal skills and mental health, within curriculum design must be taken
137 seriously to aid progression and avoid disappointment, especially in careers which
138 have high employee demands; veterinary nursing is one such career.^{18,31,32}

139

140 Medical and diagnostic research advancements provide a constant challenge for
141 professionals, students and education providers to maintain currency.^{25,33,34} There is
142 a scarcity of evidence, both academic and practice based, to suggest how knowledge
143 is disseminated within the industry and it is often only those seeking CPD that receive
144 it.³⁵ Nurturing the passion that is displayed by students who have an '*intrinsic desire*'
145 to follow the route of becoming an RVN by incorporating skills such as lifelong learning,
146 critical thinking, problem solving and independent and self-directed study will support
147 students clinically, academically and morally.^{29,36-38} UK based VN education has
148 developed since its creation by providing entry routes to suit the individual, all with a
149 focus on creating RVNs who have a mixed skillset (Table 1).³⁹ In 2014, further

150 education day-release courses were the most common entry route whilst in 2019 a
151 shift was seen towards those wanting the university experience. Ultimately, the
152 decision to undertake a particular route can depend on the employment status of the
153 individual with some employers having a preference for a particular route.^{24,40}
154 Determination of which educational route is more beneficial to potential RVNs is
155 important when considering future career prospects. A degree qualification can aid
156 progression into roles such as leadership or moving into management whilst on-the-
157 job training also allows for early development of employer-employee relationships.^{20,41}
158 All qualification routes require on the job training but degrees require a placement,
159 which can be unpaid compared to the traditional diploma route where students study
160 alongside a full-time paid position in practice. The undergraduate placement is
161 designed to enable students to experience the veterinary workplace and develop key
162 skills but there is no known research comparing the two routes or the perceptions and
163 learning gain of placements^{33, 46, 54, 55} To ensure consistency and relevance of content,
164 vocational and higher education courses are evaluated regularly with feedback gained
165 from a variety of sources; students, graduates, teachers and representatives of
166 industry.^{42,43} In the UK and Ireland the RVN role is regulated closely with a
167 commitment to maintaining competence, with other countries striving to increase
168 credentialing to create a standardised profession.²² Discussions about the career
169 cannot, however, be undertaken in detail until factors such as how students are being
170 prepared has been considered.^{29,44,45}

171

172 (Place Table 1 here)

173

174 The paucity of research about the routes to qualification and preparedness of the RVN
175 limit our ability to fully understand current suggestions regarding job satisfaction,
176 career progression and leaving the profession. Without this fundamental
177 understanding of how prepared RVNs are following their qualification route it is difficult
178 to make concrete conclusions, therefore, the research aimed to explore and identify
179 how UK RVNs perceived that their education route prepared them for their
180 professional roles within practice. The objectives were to assess what elements of an
181 RVNs education prepared them for their role and to investigate differences that exist
182 between educational variables and preparedness for the role.

183

184 **Methodology**

185

186 A research methodology suited to a positivist paradigm was utilised to permit a
187 quantitative approach to be taken, which allowed for the development of trustworthy
188 data from the participants.^{46,47} Due to the lack of research in the area of preparedness
189 of VNs a quantitative approach was deemed the most appropriate and therefore a
190 descriptive, cross-sectional design was created to determine if differences existed
191 between the variables.⁴⁷ Furthermore, grounded theory using an deductive approach
192 was taken to content analysis, using frequencies, to bring forward any trends from
193 within the data.⁴⁸ Due to the deductive nature of the research a survey approach using
194 a questionnaire was used to allow for statistical generalisation to the larger population
195 of RVNs.^{24,49} Epistemologically the research took into consideration prejudices and
196 stereotypes that may occur due to the insider position and training of the researcher.

197

198 **Methods**

199

200 Ethical approval was gained from the Hartpury University Ethics Committee prior to
201 commencing any data collection.

202

203 *Questionnaire design*

204

205 In line with the quantitative design, categorical data and Likert scales were used to
206 elicit nominal and ordinal data for analysis. The questionnaire was designed using
207 Microsoft Forms (Office 365) consisting of 25 questions which were adapted from a
208 previously validated questionnaire to suit the UK RVN.¹⁶ The list of duties in the
209 questionnaire was adapted using information published by the RCVS.⁵⁰ The survey
210 began with demographic profiling of respondents to identify their perceptions of
211 preparedness for the role. To allow for easier understanding of the results, a Customer
212 Satisfaction Score (CSAT) was used to determine the point at which a training element
213 was satisfactory, or for the purposes of the research 'valuable'. The level at which
214 scores were deemed to be of value to the individual was 80% or over.⁵¹

215

216 A pilot study was conducted to allow relevant industry personnel to consider
217 refinement and relevance of the questions posed. Following this process adjustments
218 were made to the duties in the Administrative and Patient Care sections to allow for
219 full clarity.

220

221 *The sample*

222

223 The questionnaire was published online from December 2020 until February 2021
224 using convenience sampling. The questionnaire was posted to relevant social media
225 sites, such as *Vet Nurse Chatter*, *Veterinary Nurses UK* and the *BVNA*. Corporate
226 veterinary practices were also approached and asked to forward the questionnaire to
227 their employed RVNs and relevant university alumni were contacted via email if they
228 had consented to be contacted for research. The sampling approach may have
229 branched into a snowball effect as the questionnaire was circulated but this could not
230 be verified.

231

232 This approach was used to maximise the sample size, ensure the sample met the
233 inclusion criteria and was appropriate during the Covid-19 pandemic. The inclusion
234 criteria were 1) all participants were over 18 years of age 2) they were on the UK's
235 Register of Veterinary Nurses with a small animal speciality 3) were currently working
236 in a veterinary practice or had been within the last 12 months. All participants not
237 meeting the criteria was excluded from the data analysis.

238

239 Although an exact figure for practising VSs can be determined, it cannot be for RVNs
240 currently working in practice.⁷ A sample size calculator was therefore used to
241 determine the ideal sample required from the population of 15782 UK based RVNs to
242 reliably represent the opinions of RVNs and meet standard power assumptions.⁷ A
243 confidence level of 95% and a margin of error of five was used to calculate that if all
244 RVNs were in fact working in practice a maximum sample of 375 would be required.⁵²
245 To determine the deviation between opinions of respondents and the opinion of the
246 entire population a margin of error was calculated with a 95% confidence level.

247

248 *Data analysis*

249

250 Where frequencies were too low for analysis, categories were combined to ensure
251 viability. Both honours and foundation degrees were classified as degrees, both FE
252 and HE diplomas as diploma routes and NVQ and Green book as other. Job titles
253 were split into VN and management roles where lead nurses and below were classed
254 as VNs and head/senior nurse and any managerial role as management roles as per
255 industry norms. Demographic data was descriptively analysed using frequencies,
256 mode, mean and standard deviation. In order to determine associations in the
257 demographic data crosstabulations were utilised for job title and educational route
258 against all other educational variables. Pearson Chi-square correlations were used to
259 identify any relationships between nominal data responses to questions, for example
260 job title and year of graduation and age. Ordinal data from Likert scales were analysed
261 using median scores and non-parametric of difference utilised to identify differences
262 between nominal categories. Where the Kruskal Wallis test was used a Bonferroni
263 post Hoc test allowed identification of where the difference lay.

264

265 **Results**

266

267 A total of 153 participants completed the questionnaire, 12 of which did not meet the
268 inclusion criteria of currently working in a small animal practice. 141 RVNs were
269 therefore eligible for data analysis.

270

271 The majority of respondents were female (98.5%), therefore the effect of sex was not
272 analysed. Ages of respondents ranged between 20 and 59 years old with a mode of
273 25-29 years of age. The most common educational route was HE degree (50.0%) with
274 29.3% undertaking a diploma route and the remaining 20.7% having trained via NVQ
275 or green-book routes. Respondents graduated from their training establishment
276 between 1987 and 2020 with 53.6% of respondents graduating between 2015 and
277 2020. The majority of respondents were in full time permanent positions (81.4%) with
278 a large proportion of the sample (43.2%) working in urban areas. The mean (\pm SD)
279 number of years in their current job role was 3.7 (\pm 3.7), whilst years spent in their
280 current practice was 4.9 (\pm 4.6).

281

282 Job titles were separated into predominantly VN (66.4%) or management (33.6%)
283 roles to determine if the remaining variables were affected by the different roles.
284 Following a Pearson Chi square test of association significant relationships were found
285 between job title and the year the respondent qualified ($p=0.02$) and job title and their
286 age ($p=0.004$). All other variables did not produce significant associations. When
287 focusing on the education routes further, 77.1% of respondents in VN roles were
288 educated through a degree route whilst 55.0% of those in a management role were
289 educated via other routes. The mode for the age of those within a VN role was 25-29
290 years whilst a bimodal distribution was seen for those in a management role (25-29
291 and 30-34 years of age). The mean (\pm SD) number of years for an RVN, in a
292 management role, to be with their current practice was 7.0 (\pm 6.1) whilst it was 3.8 (\pm
293 3.0) for those in a VN role.

294

295 The median scores for the perception of how respondents felt their training had
296 prepared them for their role were reported and then compared between the different
297 education routes using a Kruskal Wallis and Post hoc Bonferroni test of difference. A
298 significant difference was found between other and degree routes, diploma and degree

299 routes and other and diploma across the variables with higher scores for degree routes
300 (Table 2).

301
302 (Place Table 2 here)

303
304 Respondents consistently scored “*Team Work*”, “*Communication*” and “*Well-being*”
305 lower than “*Knowledge and Understanding*” when indicating how these elements of
306 their education prepared them for their role as an RVN. Combining well & extremely
307 well: “*Prepared you emotionally for working as an RVN*” received the lowest score
308 (24.9%) whilst “*Provided you with a solid base of scientific information to underpin your*
309 *work as an RVN*” received the highest score (68.8%) (Table 3), no statements scored
310 over 80%.

311
312 (Place Table 3 here)

313
314 Using a Kruskal Wallis H test to assess if respondents felt prepared for the job roles
315 they carried out statistically significant differences were identified between educational
316 routes and administrative job roles for maintenance of equipment ($H=11$, $df=2$, $p=.003$)
317 (1 ± 1), stock ordering ($H=6$, $df=2$, $p=.03$) (1 ± 1) and clinical coaching ($H=6$, $df=2$,
318 $p=.03$) (2 ± 1). A statistically significant difference was also identified between
319 education routes and managerial job roles for management of people ($H=7$, $df=2$,
320 $p=.02$) (2 ± 1). Finally, statistically significant differences were identified between
321 educational routes and patient care job roles for nurse clinics ($H=7$, $df=2$, $p=.02$) ($1\pm$
322 1). The Post Hoc analyses revealed a significantly higher score for degree routes
323 compared to other for maintenance of equipment and diploma compared to other for
324 managerial roles and patient care.

325
326 Ten out of 19 subject areas received scores of over 80% when “*Very Valuable*” or
327 “*Valuable*” were combined in relation to how valuable they were in preparing
328 respondents for their job role, those which did not score 80% or over were Animal
329 Behaviour, Exotic/Avian/Reptilian Patient Care, Nutrition, Business Skills, Academic
330 Skills, and Mental Health (Figure 1). Placement scored 77.3%, however, it is not an
331 element of all educational routes.

332
333 (Place Figure 1 here)

334 When assessing the value of subject areas to respondents statistically significant
335 differences were determined using a Kruskal Wallis H test between educational routes
336 and Anaesthesia ($H=13$, $df=2$, $p=.001$) (1 ± 0), Animal Handling ($H=11$, $df=2$, $p=.003$)
337 (1 ± 0), Small Animal Patient Care ($H=11$, $df=2$, $p=.003$) (1 ± 0), Academic
338 Research/Evidence-Based Research ($H=18$, $df=2$, $p<.001$) (2 ± 1), Placement ($H=42$,
339 $df=2$, $p<.001$) (1 ± 0) and Mental Health and Welfare of self and others ($H=17$, $df=2$,
340 $p<.001$) (2 ± 1). The Post Hoc analyses revealed significantly higher scores for diploma
341 routes compared to degree and other. Respondents from all educational routes except
342 Degree stated that work experience prior to starting course was “*Not Applicable*”. All
343 “*Green Book*” respondents stated that lecture support was “*Not Applicable*”. Areas
344 have also been highlighted that educators need to address in regards to preparing
345 VNs for the roles they will be carrying out (Table 4).

346
347 (Place Table 4 here)

348
349 After analysing how respondents felt their educational route had prepared them for
350 their job role statistically significant differences were determined using a Kruskal Wallis
351 H test between education routes and work placement ($H=13$, $df=2$, $p=.001$) (1 ± 0). The
352 Post Hoc analyses revealed significantly higher scores for other routes compared to
353 degree and diploma.

354
355 Diploma and degree route respondents scored their preparedness for their role higher
356 than other routes in all areas other than the educational route as a whole.

357 **Discussion**

359
360 The research aimed to explore and identify how RVNs in the UK perceived that their
361 educational route prepared them for their roles within practice. The objectives were to
362 assess what elements of an RVNs education prepared them for their role and to
363 investigate differences that exist between educational variables and preparedness for
364 the role. To ensure that future RVNs are fully prepared for the career they wish to
365 undertake it is important to focus not just on an individual's intellectual qualities but
366 also their well-being. The RCVS Day One Competences list key areas that need to be
367 studied, but these should not be used as a definitive list for programmes⁵³.

368 *Preparedness for their role*

370
371 The current project suggests that RVNs feel more prepared in areas such as the
372 knowledge and understanding of scientific information, also known as hard skills which
373 historically, underpins their work rather than soft skills such as teamworking,
374 communication and well-being which can be linked to personality traits.⁵⁴ Hard skills
375 are easier to formally teach and be recognised by the student because of their factual
376 nature. However, it should also be noted from the current study that not all subject
377 areas received the same level of perceived value, with those that veer away from the
378 traditional small animal focus receiving lower scores e.g. Exotic/Avian/Reptilian
379 Patient Care, although they are included in the RCVS Day One Competences.^{53,55}
380 Embedding a diverse syllabus, that covers an array of subject areas, whilst being
381 taught robustly will aid animal welfare by providing confidence and competence in all
382 areas, not just those that are encountered most commonly in the small animal
383 veterinary environment. It is important therefore, for educators, of any discipline, to
384 focus on reflecting on content annually to ensure that it is appropriate and relevant to
385 the role being prepared for whilst the educational establishment utilise '*highly skilled*
386 *professionals*' who recognise and understand the requirements of the students.⁵⁶

387
388 Alongside attaining accountability for their own actions RVNs are diversifying their role
389 by expanding into practice management and business ownership, highlighting why
390 Business Skills may have been raised as an area for unpreparedness.^{26,57} Allowing
391 RVNs pathways to continue to diversify into other areas of the profession can give
392 them the freedom to continue to use, develop and promote this skillset, continue to
393 work within the industry and alleviate pressures that may be caused by
394 dissatisfaction.^{9,11,58,59}

395
396 With a focus on increasing client access to RVNs through nursing clinics subject areas
397 such as Animal Behaviour, Nutrition and Evidence-based Research need to be

398 embedded within curriculums to ensure that clients can develop and maintain a level
399 of trust and respect in the RVN that is advising them. Each subject area is a potential
400 degree qualification in itself, it must also therefore be stressed that RVNs engage
401 appropriately with their CPD requirements to ensure that they stay up to date and are
402 driving their own continued education.⁵⁸ The importance of hard skills is apparent in
403 medical related industries, however, employers often value soft skills over hard skills,
404 in client facing roles, because they can drive customer and staff satisfaction in areas
405 such as communication which add value to the business.^{54,60} The employee also
406 benefits through long-term job success linked to the appropriate use of these soft
407 skills.⁶¹ Educational providers should be advised to increase soft skill development
408 and integrate it alongside hard skills to compliment and ensure preparedness
409 throughout the role.^{13,54,62}

410
411 The final subject area to be addressed within preparedness was mental health. Due
412 to changes to the profession which have been highlighted since Brexit and the Covid-
413 19 pandemic it is important to ensure that the welfare of RVNs and those around them
414 is protected.^{8,63,64} Registering as an RVNs focuses on the ability to reflect, think
415 critically and use evidence-based research within daily duties. RVNs that are fully
416 prepared for their role can help to create an atmosphere of trust in the workplace whilst
417 also increasing the RVN profile to the public and providing opportunities to develop
418 job satisfaction.⁶⁵⁻⁶⁷ Whatever the qualification route, the current study results give
419 rise to the consideration of formal or informal mentorships to prepare newly graduated
420 RVNs for areas of practice where additional support is needed by providing
421 opportunities to understand the workplace, as is common in human nursing.⁶⁸⁻⁷¹ It is
422 important for an individual's mental health that the profession support colleagues in an
423 open culture where all aspects of work are acknowledged and discussed.⁷² Practices
424 with an open, transparent and supportive culture are able to provide positive learning
425 experiences and increase team morale which in turn can have an positive impact of
426 satisfaction levels.^{68,70,73} Educational providers need to be aware that students require
427 a combination of intellectual and emotional capabilities to prepare themselves for the
428 career ahead.⁶⁸ Within veterinary practices it is normal to expect employees to suppress
429 feelings to ensure that high quality service is provided in emotional situations and a
430 majority of RVNs in the 2014 RCVS Survey felt that newly graduated individuals
431 needed to be supported more as they transitioned from education into
432 employment.^{40,66} Supporting mental health, and in turn physical health, may allow
433 RVNs to focus on other areas of the profession and recognise that although
434 preparedness does come with its challenges, the career of an RVN is
435 worthwhile.^{24,67,70}

436
437 Although educational programmes are regulated to ensure relevance and reviewed
438 for appropriate content to try and avoid gaps in knowledge, the current study suggests
439 that there is still more to be done by all those involved with the development of curricula
440 for VNs to ensure that students are prepared fully. Educators and employers need to
441 ensure that VNs are given the opportunities to experience a range of clinical, practical
442 and theoretical situations to support them in their professional development. The
443 RCVS Day One Competences state that an RVN should be able to '*recognise personal
444 and professional limits*' to allow them to conduct their job appropriately, they must
445 therefore be given opportunities to learn how to do this.⁵³

446
447 *Educational differences*

448

449 Degree level routes showed greater levels of preparedness compared to other
450 qualification types. The trend towards RVNs undertaking the degree level route should
451 suggest a greater perception and level of preparedness emerging in the industry if
452 students take the opportunities offered^{55, 125-127}. This has been suggested to be due
453 to the increased period of training, but the industry remain cautious of the potential
454 lack of work-based learning and academic focus.⁷⁴⁻⁷⁶ With additional time in education
455 due to the structure of the degree course it could be expected that RVNs would feel
456 more prepared following this route. Employers are, however, cautious of university
457 graduates who they often perceive to be only skilled in gaining educational credits
458 rather than life-long learning opportunities.^{20,77} With the drive to increase the visibility
459 and role of RVNs to the public and employers it is important to ensure courses match
460 the expectations of all those involved alongside embedding the importance of areas
461 such as research to develop stronger evidence-based practice.⁷⁸

462

463 The current study provides an insight into job title and length of time in practice
464 indicating that longevity and loyalty within a practice can lead to promotion rather than
465 the initial qualification route. Those RVNs from Diploma routes felt more prepared for
466 management roles, however, most in a management position qualified via "Other
467 routes". This could be due to those being in management being qualified for a longer
468 period of time, or the greater period of on the job training, both require further
469 investigation. Access to education routes with on-the-job training and career-related
470 activities help to create a bond between the student and employer that has the
471 potential to generate longer term job opportunities, if loyalty is valued.^{20,68,79} According
472 to the current project employers are rewarding those employees that learn whilst
473 working which suggests adjustments to placement opportunities may be beneficial for
474 degree students to allow opportunities for similar employer-employee bonds to
475 develop. Placement opportunities must, however, mirror the demands of the
476 profession ensuring health-care needs are met and the student is supported to prepare
477 for professional registration.⁷⁴ Due to the structure of HE programmes and financial
478 considerations of students thought must be given to achieving the most user-friendly
479 placement opportunities, by determining if the length, timing within the academic year
480 and support is optimal to the well-being and learning of the student.²⁰

481

482 Whilst the current study suggests that RVNs felt more prepared in hard skills areas,
483 closer analysis indicates that diploma routes scored higher for preparedness in relation
484 to the majority of specific subject areas. This could be linked to the abilities of those
485 training on the job to transfer theory directly to practice when given the opportunities.
486 The value of work experience to RVNs needs to be further investigated because other
487 educational routes scored it higher than degree and diploma routes. Degree route
488 respondents highlighted that they felt more prepared for the maintenance of equipment
489 which indicates a deeper level of understanding of the resources that they will work
490 with. All stakeholders must embrace opportunities to ensure RVNs are fully prepared
491 for their role: 1) educators to engage with CPD opportunities, such as returning to
492 practice, to ensure that those designing and implementing training programmes are
493 fully aware of the expectations and realities of training to become an RVN.^{24,68} 2)
494 employers to review Schedule 3 amendments of the Veterinary Surgeons Act
495 alongside VN teams to allow for appropriate delegation of duties⁷⁸ 3) RVNs to engage
496 with all opportunities they are presented with throughout their training and lifelong

497 learning 4) employers and educators to communicate regularly to ensure expectations
498 and realities of education align.^{26,80,81}

499

500 **Limitations**

501

502 The research was purposely restricted to current practicing RVNs or those that had
503 been in practice within the previous 12 months to obtain data that was as relevant as
504 possible to 2021. Due to their being no exact data on RVN numbers working in practice
505 it is difficult to determine an exact sample size and therefore accurate representations
506 of this are also difficult to determine. The use of social media to reach respondents
507 should be considered when generalising the results to the larger population due to the
508 restrictions placed on involvement.⁸²

509

510 The length of time since being educated should be considered so that researchers are
511 mindful of the potential problems with memory recall, however the NVQ and
512 Greenbook routes are no longer available and therefore do not need to be considered
513 when addressing areas of concern.^{83,84}

514

515 **Recommendations for future research**

516

517 Life, internal and external to the veterinary environment, is developing at a fast pace
518 and it is important that educators are keeping up and that students feel they have
519 received the required education. Establishing the weighting of academic subjects to
520 RVNs determines their relevance when applied to the workplace, however, the
521 employer should also be questioned about the tasks they feel RVNs are undertaking
522 and how prepared they felt newly graduated RVNS were.

523

524 Job satisfaction varies depending on the individual and is a much-researched area of
525 many professions. Factors have been analysed previously to determine levels of job
526 satisfaction in the veterinary nursing profession globally with factors such as pay scale
527 and work load being raised. Establishing where RVNs felt any unrealistic expectations
528 originated from may benefit educational providers and employers.

529

530 Relationships between employees and employers are relevant to the progression of
531 individuals in the workplace, however, the relationship of the student with their practice
532 based clinical supervisor must not be forgotten and would allow for research into how
533 this element of training prepares RVNs for practice.

534

535 **Conclusion**

536

537 Differences can be seen between the levels of preparedness of the RVNs sampled,
538 however, the key difference identified was that degree route respondents felt more
539 prepared on the whole compared to diploma route students who felt more prepared
540 for individual subjects. It can be perceived from the current study that the structure of
541 the degree route works when preparing these RVNs for their future career, however,
542 more focus is needed on the individual subject areas to support RVNs because they
543 do not have the abilities to put theory to practice as easily as Diploma students do.
544 Education providers need to nurture the passion that they are presented with by
545 providing an all-encompassing education, focusing on both soft and hard skills, to
546 create well-rounded individuals who are prepared for the career they are entering.

547 RVNs need to be aware that their education cannot prepare them for all scenarios in
548 their working life and that the route that they take needs to be the right fit for their
549 learning style and educational needs. Employers potentially have the hardest role by
550 providing the bridge between education and practice, ensuring open and transparent
551 lines of communication are established and maintained between practices, educators
552 and students is essential to ensure the development of all those involved. Support for
553 those entering the profession should be clearly available through all stages of
554 development: Student Veterinary Nurse, new graduate and experienced RVN to
555 ensure that RVNs can make informed decisions about their future. More research is,
556 however, needed, to continue to understand the intricacies of the areas that RVNs do
557 not feel prepared in so that education providers can development curricula, if
558 necessary, which in turn can help to support job satisfaction.

559
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572 573 **Figure Captions**

574
575 **Figure 1: Value of educational training to preparedness in regards to subject areas
(80% marker denotes minimal level at which value was seen)**

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816 **Tables:**

817

818 Table 1: Qualification routes for student veterinary nurses and their current use in the
 819 UK

Qualification Route	Current relevance
Bachelor of Science (BSc) degree (Hons)	Level 6 – Registered Veterinary Nurse status
Foundation Science (FdSc) degree	Level 5, with option to ‘top-up’ to full BSc – Registered Veterinary Nurse status
Higher Education Diploma	Level 5, with option to ‘top-up’ to full BSc – Registered Veterinary Nurse status
Further Education Diploma	Level 3 – Registered Veterinary Nurse status
NVQ	Level 3, no longer an available course option
Green book	Level 3, no longer an available course option

820

821 Table 2: Statistically significant Kruskal Wallis H test and Bonferroni Post Hoc test
 822 results for education route against how prepared respondents felt following their
 823 training

Variable	Test Statistics	Median ± IQR	Degrees of freedom
Provided you with a solid base of scientific information to underpin your work as an RVN	$H = 7$ $p = .02$	3 ± -1	2
Provided you with problem solving and reasoning abilities you needed to be an RVN	$H = 8$ $p = .01$	3 ± -1	2
Helped your understanding of legal and regulatory issues within a veterinary practice	$H = 7$ $p = .02$	3 ± -1	2
Equipped you for developing work place relationships with other members of staff with the practice	$H = 12$ $p = .002$	2 ± -1	2
Equipped you to understand the diverse roles and responsibilities of team members within a veterinary practice	$H = 11$ $p = .004$	3 ± -1	2
Prepared you for interacting with a range of colleague	$H = 12$ $p = .002$	3 ± -1	2
Helped your understanding of moral and ethical issues within a veterinary practice	$H = 21$ $p < .001$	3 ± -1	2

824

825 Table 3: Indication of how respondents felt their training prepared them for their job
 826 role as an RVN

Knowledge and Understanding	Poorly & Less than adequately (%)	Adequately (%)	Well & Extremely Well (%)
Provided you with problem solving and reasoning abilities you needed to be an RVN	12.7	35.5	51.8
Helped your understanding of legal and regulatory issues within a veterinary practice	8.5	30.5	61
Provided you with a level of technical proficiency adequate for starting as an RVN	4.9	34.8	60.3
Provided you with a solid base of scientific information to underpin your work as an RVN	4.2	27	68.8
Team Work			
Equipped you for developing work place relationships with other members of staff within the practice	12.7	43.3	44
Equipped you to understand the diverse roles and responsibilities of team members within a veterinary practice	12.7	32.6	54.7
Communication			
Prepared you for interreacting with a range of clients	24.8	34	41.1
Prepared you for interacting with a range of colleagues	17.8	38.3	44
Well-being			
Prepared you emotionally for working as an RVN	44.7	30.5	24.9
Prepared you physically for working as an RVN	29	35.5	35.5
Helped your understanding of moral and ethical issues within a veterinary practice	10.6	27	62.4

827

828 Table 4: Suggested areas for employers and educators to address in regards to
829 preparedness

Subject Areas	Preparedness for the role
Animal Behaviour	Being prepared emotionally for the job role
Exotic/Avian/Reptilian Patient Care	Being prepared physically for the job role
Nutrition	
Business Skills	
Academic Skills and Evidence-based Research	
Mental Health of self and others	

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