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# Support needs of adolescents' post-cancer treatment: a systematic review.

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## **Abstract**

### **Introduction**

The study aimed to investigate the support needs for adolescents' post-cancer treatment.

### **Materials and Methods**

A systematic literature review was conducted, articles were obtained from the following databases, Science Direct, PubMed and SCOPUS. Additional studies were identified from the reference lists of articles included in the review.

### **Results**

119 articles were identified as potentially relevant, of these, a total of 16 articles were nominated to be included in the review for analysis.

### **Conclusion**

The role of relationships and key workers were important to enabling survivors to self-manage. Studies have commended the role of friendships during the cancer treatment process but also as a means to coping with issues relating to survivorship. Using a coping mechanism thought to be beneficial by the survivor often improves their overall wellbeing. The eagerness to continue a normal successful life post-cancer treatment seems to be overshadowed by the fear of not being able to conceive offspring. This, in turn, can impact the psychological wellbeing of survivors, thus signifying the need to develop ways in supporting these individuals. With research into quality of life (QoL) and survivorship issues continuing to progress and reach new heights, there is still much to be done.

## Highlights

- No definitive means of combatting survivorship issues
- Many AYA may appear to have managed well following treatment
- Impact of treatment becomes apparent subsequently, 'hiatus in care'.

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### Keywords:

*Survivorship; Quality of life; Psychosocial issues; Support needs; Support options; Infertility; Body image; Anxiety; Social support.*

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## Introduction

In the United Kingdom, it is estimated that 2,300 adolescents aged between 15-24 years old are diagnosed with cancer each year<sup>1</sup>. Due to the advancements in cancer treatment, there have been notable improvements regarding the survival of persons diagnosed with cancer during adolescence<sup>2</sup>. Cancer Research UK reports that the 5-year survival rate amongst adolescents and young adults (AYA) is approximately 80%<sup>1</sup>. Therefore, it is crucial to recognise 'survivorship' as a unique stage of the cancer trajectory<sup>3</sup>.

Transition into life after cancer, side effects from treatment and anxiety of the risk of a recurrence can inflict different emotions and require different levels of support to meet the needs of the individual<sup>3</sup>. A study uncovered the significance of alopecia on a person's self-perception which in turn promotes body image dissatisfaction, low self-esteem and many other characteristics that are prevalent among AYA currently undergoing cancer treatment<sup>4</sup>.

Although some of the psychosocial pressures begin to ease post-cancer treatment, further problems arise long-term that gravely affect the mental health of AYA cancer survivors<sup>5</sup>. Long-term AYA cancer survivors report a higher incidence of anxiety and depression, which impedes on their ability to gain employment or educational credentials<sup>5</sup>. As the burden of cancer remains, the safeguarding of the survivors' QoL has become increasingly important and plays a fundamental role in the evaluation of cancer therapy<sup>6</sup>.

The aim of the systematic review is to clarify the needs of AYA post-cancer treatment and exploring the support options available.

## Research Methodology

The electronic databases Science direct, PubMed and SCOPUS were reviewed, these particular databases were chosen due to their accessibility of numerous peer-reviewed journals. The use of Boolean operators allow the author to narrow the search to retrieve articles most relevant to the research question<sup>7</sup>.

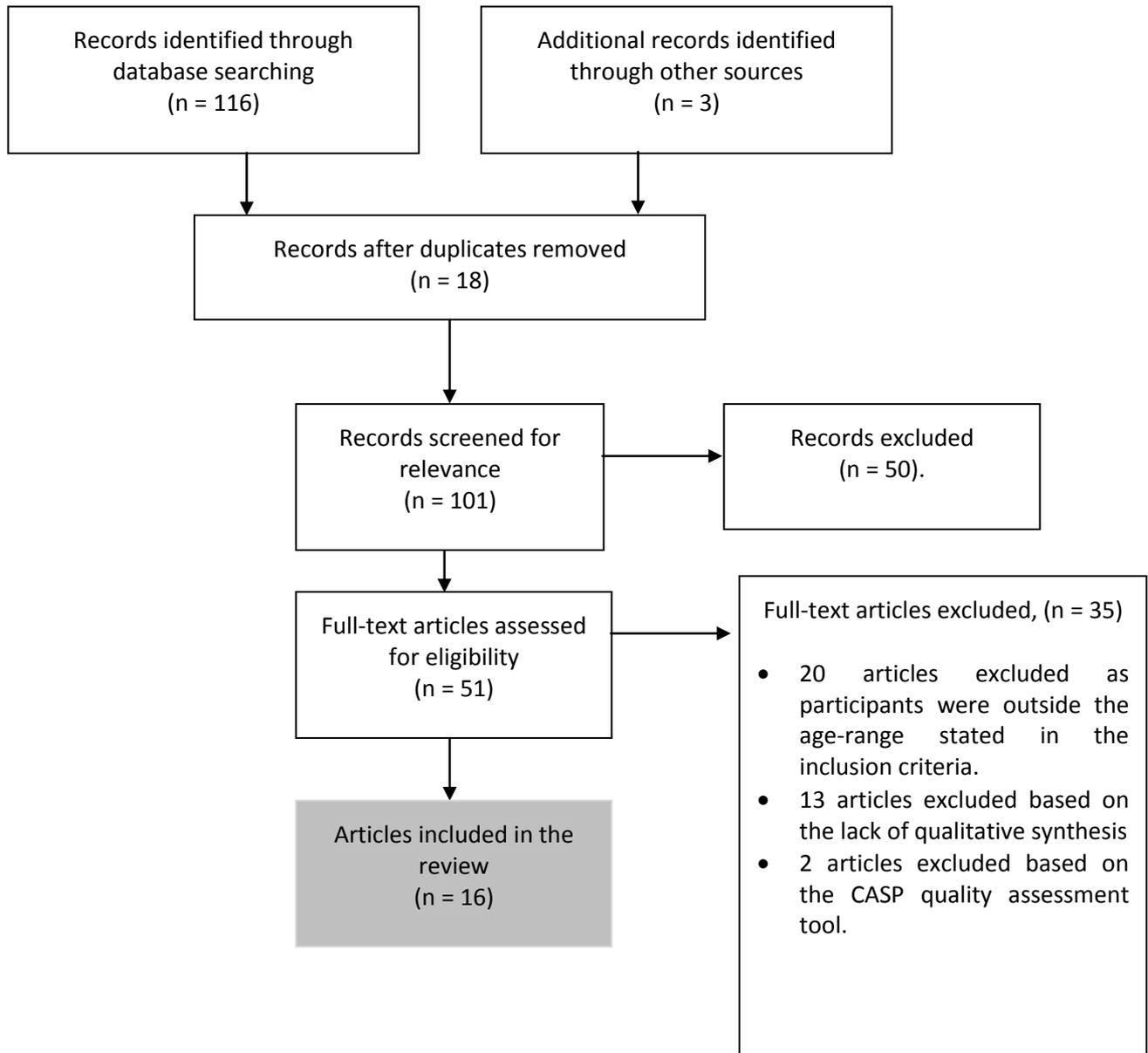
### *Search terms*

The search terms included combinations of the following phrases or keywords: “adolescents OR young adults OR teenagers” AND “support needs OR quality of life OR support available OR psychosocial support” AND “post-cancer treatment OR after cancer”.

### *Inclusion and Exclusion criteria,*

Inclusion criteria included articles: (1) published in English; (2) in a peer-reviewed journal; (3) access to full text; (4) published between January 2004 and August 2016.

Exclusion criteria: (1) participants outside the age constraints (12-26 years old); (2) the studies aim not directly relevant to core concepts of support needs, QoL or support availability for AYA post-cancer treatment; (3) lack of qualitative synthesis.



**Figure 1:** Outcome of the search strategy and the decision-making model

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3 *Search strategy and selection process*  
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6 Reference lists of selected papers were reviewed for additional articles that may be  
7 pertinent to the study and seen as a necessary step when conducting a review<sup>8</sup>. Grey  
8 literature also provides a sound grounding on the current understanding of issues around  
9 support post-cancer treatment<sup>8</sup>. Hence the inclusion of key documents relating to AYA  
10 survivorship will be included in the review.  
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14 All articles included in the review were subject to attaining ethical approval. Ethics play a  
15 vital role in ensuring all researchers are held accountable to upholding the rights and  
16 dignity of participants in their research, this is especially important due to the  
17 vulnerability of the participants in question<sup>9</sup>.  
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21 The quality assessment tool used is the Critical Appraisal Skills Programme (CASP) that  
22 will determine the final selection of articles<sup>10</sup>. The series of questions used to appraise  
23 each article were taken directly from the CASP tool and can be found in Appendix 1.  
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26 A total of 16 papers were nominated to be included in the review for analysis.  
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## Results

No	Author	Study type	Methods	Sample Size.	Age range of participants. (years)	Key findings.
1	Barr et al., (2016)	Narrative review	The study reviewed a variety of issues ranging from financial issues, psychological support, sexuality and body image with the aim to consider the opportunity for progress.	-	-	<p>Establishing a discrete AYA oncology discipline with related training programs necessary for health care professionals to attending to challenges facing AYA at any stage of the cancer journey.</p> <p>The introduction to community-led or internet-based initiatives that recognise that access to quality care for AYA is a right, not a privilege.</p>
2	Choquette et al., (2016)	Semi-structured interviews	In-depth interviews were conducted using an interpretive descriptive approach using 11 adolescents' post-cancer treatment. The transcripts of the taped interviews were reviewed by the study team.	11	13-17	Nearly all adolescents were impacted negatively by the cancer experience however the ability to maintain friendships during the transition emerged particularly salient allowing adolescents to rise above the challenges and the residual effects of cancer treatment.

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3	Cotton et al., (2005)	Systematic review	18 articles were identified through searching the PsychInfo and Medline databases using a combination of keywords related to spirituality and religion.	-	-	Ultimately, the purpose of religion and spirituality is to evaluate and develop targeted intervention efforts. Through more sophisticated study design can research understand how religion or spirituality impacts adolescents' health and wellbeing.
4	Dudzinski (2004)	Normative ethical analysis.	Different ethical phenomena were examined to form a basis for the ethical standards if clinical trials were to be conducted.	-	-	Initial research into oocyte and ovarian cryopreservation stemmed from semen preservation using non-invasive techniques which resulted in the preservation of male fertility. Though the process of preservation of female fertility would improve the morale of patients. The ability to offer this intervention before the commencement of cancer treatment is difficult as there would be a clear risk to health if any kind of cancer treatment is delayed.
5	Fan and Eiser (2009)	Systematic review	7 studies were identified from databases CINAHL, MEDLINE and PsychInfo.	-	-	Changes in body image have adverse implications on self-esteem and can be moderated through social support. 7 articles included in the review recognise social support as a means to facilitate in adjusting to changes in physical appearance.

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6	Galan et al., (2016)	Delphi Study	A Delphi study was implemented to address the aims of the study, which entailed the participation of AYA cancer survivors and extracting individual opinions with the goal of achieving a consensus among the group.	13	14-24	Six themes were highlighted and given high importance among the participants, with each individual theme followed with a number of sub-needs. The themes highlighted were; counselling and psychological support, developing an adaptive social network, financial support, maintaining a healthy lifestyle, needs specific to post-cancer treatment and specialised care and strategies for returning to 'normal' life and adapting to this new role.
7	Kelly (2013)	Discussion paper	The approach taken consisted in examining the available evidence and combining it with examples of recent service and research developments.	-	-	Results found improved knowledge in sexual issues resulted in improved self-esteem relating to body image and relationships. The study continued to discuss the option of counselling in the hopes of enhancing psychosexual developments in adolescents.
8	Michel and Vetsch (2015)	Systematic review	8 studies were identified from the Cochrane database and PubMed.	-	-	To be able to improve the quality of follow up care, and identify and treat psychological distress among AYA cancer survivors, screening tools should be implemented to better identify psychological distress.

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9	Moody et al., (2014)	Mixed methods	A mixed-method approach was implemented including surveys, focus groups and interviews with AYA survivors, parents of survivors and professionals	24	16-24	The study found that survivors need continuous psychological support along with relevant information regarding cancer. Survivors involved in the study had worries of the future, potential relapse, body image and infertility.
10	Pacey (2007)	Literature review	Critically analysing articles pertaining to different methods of fertility preservation.	-	-	Understanding the effects of the reproductive system from the cancer treatments has advanced in recent years. With assisted conception improving male fertility, current treatment options do not prove beneficial for women in retaining their fertility post-cancer treatment. Several different treatment modalities were discussed, which include endocrine therapy, in-vitro, use of artificial gametes and freezing and re-implantation of gonadal tissue. All encouraging but require further research and understanding prior to clinical use.

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11	Patterson et al., (2015)	Narrative review	To review the medical, psychosocial and behavioural late effects; survivorship care planning and transition; current research priorities; and practice implications.	-	-	Survivors of cancers in adolescence are confronted with dual demands when transitioning into an independent adult, concurrently with their transition from patient to survivor.
12	Stinson et al., (2015)	Semi- structured interviews.	Interviews were conducted to better understand the issues facing AYA cancer survivors	20	12-17	Findings extracted from the interviews had revealed that dating, sexual relationships, fear of infertility and access to care through adolescent friendly and accessible means allow for improvements in support which would ultimately improve psychosocial health of adolescents during and post treatment.
13	Taylor et al., (2013)	Systematic review	MEDLINE, CINAHL and PsychInfo were searched for literature published between 1987 and 2011.	-	-	With 17 articles included in the review, 9 common themes were identified: psychosocial function, the importance of peers, the importance of support, the impact of symptoms, striving for normality, impact of diagnosis, positive experiences, and financial consequences.

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14	Teenager cancer trust (TCT).  (2015)	Document	The aim of the document focuses on the different aspects of AYA life throughout the cancer journey.	-	-	Emotional and social sequelae can impact on AYA QoL, but may be addressed through survivorship programs. This allows for AYA to achieve psychological and emotional wellbeing while being able to to re-start educational or career pathways.
15	NICE improving outcomes for children and young people  (2005)	Document	The document sets out a blueprint for the NHS in improving care services for children a young people.	-	-	Appropriate psychosocial support for children and young people including their families is complex and multidimensional. Support needs are highly individual and will change as the patient and families move through the different stages of the cancer pathway. Psychological services play a crucial role in all stages of the pathway including into adult life. The difficulty to provide adequate support is due to the heavy reliance on voluntary sector funding. NICE recommends lifelong contact with cancer centres though with increasing survivorship the capacity to continue seems unlikely. Improving quality of life is not just adding years to one's life but adding life to years ahead. A shift to a stratified pathway in lieu of a 'one size fits all' will allow professionals to tailor support to meet individual needs. Individuals should be encouraged to self-manage with the right tools and information from professionals.
16	National Cancer Survivorship Initiative  (2010)	Document	The document reviewed the current follow up processes and how it could be improved as the number of survivors increases.	-	-	

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1            Though it was evident that there is a paucity of articles pertaining to psychosocial related  
2 issues, it was disappointing that only 4/16 were qualitative studies. Fan and Eiser (2009)  
3 recognised social support as a means of enabling survivors to adjust to changes in their  
4 physical appearance, and may in the future play a critical role in improving the QoL for  
5 AYA following cancer treatment<sup>11</sup>.

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7            Kelly (2013) discussed the introduction of strategies and survivorship programs aimed at  
8 enhancing QoL and survivorship<sup>12</sup>. The National Cancer Survivorship Initiative perceives  
9 QoL as not only adding years to one's life but adding life to years to come<sup>13</sup>. Teenage  
10 Cancer Trust (2015) also discussed the introduction of survivorship programs which may  
11 allow for AYA to achieve psychological and emotional wellbeing to be able to re-start  
12 educational or career pathways<sup>14</sup>.

13            Follow up for cancer survivors begins with regular clinic attendances for review by their  
14 oncologist; subsequently these reduce to bi-annual or annual visits. Where possible, all  
15 patients should be reviewed by an MDT and sufficient information provided to all  
16 patients to enable them to self-manage<sup>13</sup>. Support needs are highly individual and  
17 therefore providing a more stratified support pathway is necessary<sup>15</sup>. Current support  
18 channels for cancer survivors rely heavily on voluntary sector funding and therefore  
19 providing life-long support for all patients is impractical<sup>15</sup>. Establishing a discrete AYA  
20 oncology discipline with related training programs via community-led or internet-based  
21 initiatives may well impact positively on the lives of the survivors<sup>16</sup>.

22            The role of relationships, whether sexual or otherwise does ultimately impact the  
23 psychosocial wellbeing of the survivors<sup>12,17</sup>. The significance of infertility was evident  
24 among the studies<sup>17,18,19</sup>, therefore establishing methods of supporting those  
25 experiencing issues relating to infertility is crucial. Information provisions is necessary in  
26 supporting AYA in regards to coping mechanisms and the ability to self-manage, though  
27 this support should be widened to include family members and close relatives as all are  
28 impacted by the diagnosis.

## Discussion

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4 The importance of psychosocial needs combined with the psychological wellbeing of  
5 survivors can hinder the ability to overcome the impact of the cancer treatments.  
6 Interacting with friends enables survivors to reintegrate and regain confidence, allowing  
7 them to re-establish themselves back into normal life<sup>11</sup>. The ability to sustain friendships  
8 during the transition emerged especially prominent, allowing adolescents to rise above  
9 the challenges and the residual effects of cancer treatment<sup>20</sup>. Galán et al. (2016) provided  
10 evidence of friendships and relationships helping improve the psychosocial issues  
11 survivors face<sup>21</sup>. The fear of 'losing touch' and unable to socialise with friends can lead to  
12 isolation and act as a barrier to re-entering normality<sup>22</sup>. It was found that relying on  
13 friends for support especially those with experience with cancer was important and that  
14 having contact mutually benefitted AYA survivors<sup>22</sup>.

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18 Teenage Cancer Trust (2015) provided evidence of friendships and relationships helping  
19 improve the psychosocial issues survivors face<sup>14</sup>. However, if the survivors do not have  
20 access to these individuals the ability to develop these relationships becomes much more  
21 difficult post-cancer treatment. The introduction of a buddy system or the establishment  
22 of key workers will allow for an increase accessibility of support throughout one's cancer  
23 journey. In order for health care professionals, carers or peers to adequately aid  
24 survivors, the correct training is required to equip them with the skills to best support  
25 adolescents. Extending training to family, friends and partners is equally as important as  
26 it will impact on the day-to-day lives of survivors. This would allow individuals to self-  
27 manage with the right tools and information which in turn would reduce the reliance of  
28 voluntary funding<sup>13</sup>.

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32 NICE (2005) found that fertility and psychological issues were most common among  
33 survivors transitioning into normal life<sup>13</sup>. Though the NHS have begun to focus its agenda  
34 on developing means of combatting issues of infertility, anxiety and body image  
35 dissatisfaction, it is apparent that greater insight and investment is required to achieve  
36 the support necessary for a survivor to enter normality and succeed<sup>14</sup>.

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39 Stinson et al. (2015) found that fear of infertility was a major theme among all the  
40 participants in the interviews, and access to care would ultimately improve psychosocial  
41 health of adolescents<sup>17</sup>. Results from Dudzinski (2004) identified that fertility issues were  
42 a major concern, which greatly impacts on the ability for survivors to envisage being a  
43 parent sometime in the future<sup>19</sup>. It is essential that resources are not all focussed on the  
44 development of the means of preserving female fertility, the introduction of counselling  
45 services will allow survivors to comprehend the challenges and discuss other options  
46 available.

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49 Pacey (2007) followed the success of male fertility preservation and discussed different  
50 techniques that may in the future play a role in preserving fertility in female patients<sup>18</sup>.  
51 Oocyte cryopreservation and other techniques are now widely used to counter infertility  
52 in female cancer patients since this article's publication. An urgent referral is required for  
53 all those enrolled into the fertility preservation program with access also to counselling  
54 services to deliver necessary support.

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1 treatment can have a long-term effect on patients, therefore psychological and  
2 emotional wellbeing must be acknowledged at multiple stages following the completion  
3 of cancer treatment<sup>14</sup>. It is difficult to support AYA as young as 12-years-old to  
4 understand issues of infertility but more so ensuring capacity to make an informed  
5 decision to undergo fertility preserving treatment.

6 A 12-year-old may not have issues with dating or fertility but at a later stage in their life  
7 these issues will be more apparent, thus conducting follow ups consistently will enable  
8 those survivors to have access to support better suited to their needs<sup>17</sup>. It is often noted  
9 that psychological distress is missed during follow ups and therefore the implementation  
10 of screening for late effects as such can be beneficial<sup>24,25</sup>.

11 A study reviewed the function of religion and spirituality for AYA as a means of support  
12 post-cancer treatment<sup>26</sup>. Findings suggest that religion and spirituality can be used as a  
13 coping mechanism, often referred to as 'constructive coping', allowing one to grasp the  
14 meaning of the challenges they face<sup>26</sup>. When AYA are able to draw upon a coping  
15 mechanism they assume to be effective, it improves their overall emotional wellbeing<sup>22</sup>.  
16 This will enable survivors to move on from the issues they face, and not be stuck with the  
17 residual effects of the cancer. Though, the effectiveness of religion and spirituality is yet  
18 to be investigated, it may be the method that could help those survivors cope with  
19 infertility and psychosocial issues.  
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## 25 Conclusion

26 The systematic review aimed to investigate the support needs for adolescents' post-  
27 cancer treatment. It was intended that the defined methodology and analysis would  
28 prove to form constructive conclusions.

29 The eagerness to continue a normal successful life post-cancer treatment seems to be  
30 over-shadowed by the fear of not being able to conceive offspring. This, in turn, can  
31 impact on the psychological wellbeing of survivors, thus signifying the need to develop  
32 ways in supporting these individuals. It is reassuring to note that progress has occurred  
33 and female fertility preserving treatment is now available. Although the issue of delaying  
34 treatment for fertility preservation may be detrimental to treatment outcomes.

35 The role of relationships and key workers were important to enabling survivors to self-  
36 manage. Though many articles detached the needs of survivors and support options, a  
37 more focussed all-inclusive study is required to fully conclude and redevelop the current  
38 recommendations for survivorship.

39 Body image dissatisfaction and anxiety were common among the survivors, restricting  
40 the ability for them to secure relationships. Studies have commended the role of  
41 friendships during the cancer treatment process but also as a means to coping with issues  
42 relating to survivorship. Using a coping mechanism thought to be beneficial by the  
43 survivor often improves their overall wellbeing. Other modes of support were also  
44 mentioned which include buddy system, religion and spirituality and survivorship groups,  
45 though greater research is required to understand the effectiveness of these methods.  
46 There has been a great deal of investment and specialisation in AYA cancer treatment  
47 and support, though improved use of resources is essential to providing optimal care.  
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## **Ethical Standards**

Due to the nature of the study attainment of ethical approval was not appropriate.

## **Conflicts of Interests**

none

## References

1. Cancer Research UK. (2015). *Teenagers' and young adults' cancers statistics*. [online] Available at: <http://www.cancerresearchuk.org/health-professional/cancer-statistics/teenagers-and-young-adults-cancers#heading-Three> [Accessed 4 Jul. 2016].
2. Grunfeld, E. (2006). Looking Beyond Survival: How Are We Looking at Survivorship? *Journal of Clinical Oncology*, [online] 24(32), pp.5166-5169. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/17093281> [Accessed 5 Jul. 2016].
3. Nathan, P., Hayes-Lattin, B., Sisler, J. and Hudson, M. (2011). Critical issues in transition and survivorship for adolescents and young adults with cancers. *Cancer*, [online] 117(S10), pp.2335-2341. Available at: <http://onlinelibrary.wiley.com/doi/10.1002/cncr.26042/full> [Accessed 27 Jul. 2016].
4. Al Omari, O. and Wynaden, D. (2014). The Psychosocial Experience of Adolescents with Haematological Malignancies in Jordan: An Interpretive Phenomenological Analysis Study. *The Scientific World Journal*, [online] 2014, pp.1-7. Available at: <https://www.hindawi.com/journals/tswj/2014/274036/> [Accessed 31 Jul. 2016].
5. Clinton-McHarg, T., Carey, M., Sanson-Fisher, R., Shakeshaft, A. and Rainbird, K. (2010). Measuring the psychosocial health of adolescent and young adult (AYA) cancer survivors: a critical review. *Health and Quality of Life Outcomes*, [online] 8(1), p.25. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2850329/> [Accessed 9 Aug. 2016].
6. Bleyer, W. (2001). Cancer in older adolescents and young adults: Epidemiology, diagnosis, treatment, survival, and importance of clinical trials. *Med. Pediatr. Oncol.*, [online] 38(1), pp.1-10. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/11835231> [Accessed 18 Aug. 2016].
7. Akobeng, A. (2005). Understanding systematic reviews and meta-analysis. *Archives of Disease in Childhood*, [online] 90(8), pp.845-848. Available at: <http://adc.bmj.com/content/90/8/845.full> [Accessed 15 Aug. 2016].
8. Aveyard, H. (2010) Doing a literature review in health and social care: a practical guide. 2<sup>nd</sup> edn. Maidenhead: McGraw-Hill Open University Press. [Accessed 08 Sep. 2016].
9. The British Psychological Society, (2010). *Code of Human Research Ethics*. [online] pp.21-30. Available at: [http://www.bps.org.uk/sites/default/files/documents/code\\_human-research\\_ethics.pdf](http://www.bps.org.uk/sites/default/files/documents/code_human-research_ethics.pdf) [Accessed 19 Aug. 2016].
10. Critical Appraisal Skills Programme (CASP), (2012). Critical Appraisal Skills Programme (CASP). [online] Available at: <http://www.casp-uk.net/#!/casp-tools-checklists/c18f8> [Accessed 09 Sep. 2016].
11. Fan, S. and Eiser, C. (2009). Body image of children and adolescents with cancer: A systematic review. *Body Image*, 6(4), pp.247-256. [Accessed 14 Aug.

2016].

12. Kelly, D. (2013). Developing Age Appropriate Psychosexual Support for Adolescent Cancer Survivors: A Discussion Paper. *The Journal of Sexual Medicine*, 10, pp.133-138. [Accessed 14 Aug. 2016].
13. NICE (2005). *Improving outcomes for children and young people*. [online] Available at: <https://www.nice.org.uk/guidance/csg7/resources/improving-outcomes-in-children-and-young-people-with-cancer-update-773378893> [Accessed 24 Aug. 2017].
14. Teenage Cancer Trust, (2015). *A blueprint of care for teenage and young adults with cancer*. [online] Available at: <https://www.teenagecancertrust.org/sites/default/files/Blueprint-of-Care.pdf> [Accessed 2 Sep. 2016].
15. Department of Health (2010). *The National Cancer Survivorship Initiative Vision*. [online] Available at: <http://webarchive.nationalarchives.gov.uk/20100809113601/http://www.improvement.nhs.uk/cancer/LinkClick.aspx?fileticket=4apVUSvGcow%3d&tabid=214> [Accessed 24 Aug. 2017].
16. Barr, R., Ferrari, A., Ries, L., Whelan, J. and Bleyer, W. (2016). Cancer in Adolescents and Young Adults. *JAMA Pediatrics*, 170(5), p.495. [Accessed 14 Aug. 2016].
17. Stinson, J., Jibb, L., Greenberg, M., Barrera, M., Luca, S., White, M. and Gupta, A. (2015). A Qualitative Study of the Impact of Cancer on Romantic Relationships, Sexual Relationships, and Fertility: Perspectives of Canadian Adolescents and Parents During and After Treatment. *Journal of Adolescent and Young Adult Oncology*, 4(2), pp.84-90. [Accessed 14 Aug. 2016].
18. Pacey, A. (2007). Fertility issues in survivors from adolescent cancers. *Cancer Treatment Reviews*, 33(7), pp.646-655. [Accessed 14 Aug. 2016].
19. Dudzinski, D. (2004). Ethical issues in fertility preservation for adolescent cancer survivors: oocyte and ovarian tissue cryopreservation. *Journal of Pediatric and Adolescent Gynecology*, 17(2), pp.97-102. [Accessed 14 Aug. 2016].
20. Choquette, A., Rennick, J. and Lee, V. (2016). Back to School After Cancer Treatment. *Cancer Nursing*, 39(5), pp.393-401 [Accessed 14 Aug. 2016].
21. Galán, S., de la Vega, R., Tomé Pires, C., Racine, M., Solé, E., Jensen, M. and Miró, J. (2016). What are the needs of adolescents and young adults after a cancer treatment? A Delphi study. *Eur J Cancer Care*. [Accessed 14 Aug. 2016].
22. Taylor, R., Pearce, S., Gibson, F., Fern, L. and Whelan, J. (2013). Developing a conceptual model of teenage and young adult experiences of cancer through meta-synthesis. *International Journal of Nursing Studies*, 50(6), pp.832-846. [Accessed 14 Aug. 2016].
23. Moody, L., Turner, A., Osmond, J., Hooker, L., Kosmala-Anderson, J. and Batehup, L. (2014). Web-based self-management for young cancer survivors: consideration of user requirements and barriers to implementation. *Journal of Cancer Survivorship*, 9(2), pp.188-200. [Accessed 14 Aug. 2016].
24. Patterson, P., McDonald, F., Zebrack, B. and Medlow, S. (2015). Emerging Issues Among Adolescent and Young Adult Cancer Survivors. *Seminars in Oncology Nursing*, 31(1), pp.53-59. [Accessed 14 Aug. 2016].

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25. Michel, G. and Vetsch, J. (2015). Screening for psychological late effects in childhood, adolescent and young adult cancer survivors. *Current Opinion in Oncology*, 27(4), pp.297-305. [Accessed 14 Aug. 2016]

26. Cotton, S., Zebracki, K., Rosenthal, S., Tsevat, J. and Drotar, D. (2005). Religion/spirituality and adolescent health outcomes: a review. *Journal of Adolescent Health*, 38(4), pp.472-480. [Accessed 14 Aug. 2016].

# Appendices

Appendix 1: CASP quality assesment tool

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## Appendix 1: CASP quality assesment tool

### (A) Are the results of the review valid?

#### Screening Questions

#### 1. Did the review address a clearly focused question?

Yes     Can't tell     No

HINT: An issue can be 'focused' In terms of • The population studied

- The intervention given
- The outcome considered

#### 2. Did the authors look for the right type of papers?

Yes     Can't tell     No

HINT: 'The best sort of studies' would

- Address the reviews question
- Have an appropriate study design (usually RCTs for papers evaluating interventions)

#### Is it worth continuing?

#### Detailed questions

#### 3. Do you think all the important relevant studies were included?

Yes     Can't tell     No

HINT: Look for

- Which bibliographic databases were used
- Follow up from reference lists

- Personal contact with experts
- Search for unpublished as well as published studies
- Search for non-English language studies

**4. Did the review's authors do enough to assess the quality of the included studies?**

Yes     Can't tell     No

HINT: The authors need to consider the rigour of the studies they have identified. Lack of rigour may affect the studies' results. ("All that glitters is not gold" Merchant of Venice – Act II Scene 7)

**5. If the results of the review have been combined, was it reasonable to do so?**

Yes     Can't tell     No

HINT: Consider whether

- The results were similar from study to study
- The results of all the included studies are clearly displayed • The results of the different studies are similar
- The reasons for any variations in results are discussed

**(B) What are the results?**

**6. What are the overall results of the review?**

Yes     Can't tell     No

HINT: Consider

- If you are clear about the review's 'bottom line' results

- What these are (numerically if appropriate)
- How were the results expressed (NNT, odds ratio etc)

**7. How precise are the results?**

HINT: Look at the confidence intervals, if given

**(C) Will the results help locally?**

**8. Can the results be applied to the local population?**

- Yes     Can't tell     No

HINT: Consider whether

- The patients covered by the review could be sufficiently different to your population to cause concern
- Your local setting is likely to differ much from that of the review

**9. Were all important outcomes considered?**

- Yes     Can't tell     No

HINT: Consider whether

- Is there other information you would like to have seen

**10. Are the benefits worth the harms and costs?**

- Yes     Can't tell     No

HINT: Consider

- Even if this is not addressed by the review, what do you think?

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