Aim To systematically review all published evidence related to medication administration accuracy and its relation to improving medication adherence among paediatric population. The objectives are to identify, the main issues and challenges that the patients or their parents, caregivers or healthcare professionals face when administering or taking a medication any published methods or tools that improves medication administration accuracy and adherence among the paediatric population; and the health literacy and knowledge of parents/caregivers of children concerning medication administration.

Methods A systematic search of the literature to identify any related studies to medication administration among paediatrics was performed using the following bibliographic databases: PubMed, Scopus and Cochrane Library. The list of various synonyms of the keywords was defined following the PICOC model and a discussion between the authors. An information specialist was contacted to ensure the accuracy of the developed search terms. Search terms included a list of synonyms relating to i) paediatric ii) medication administration accuracy iii) medication adherence and iv) medication error. The search was limited to studies published in English. Only studies that report paediatric patients aged from 0 up to 18 years of age who are prescribed medication that requires administration by the parent, caregiver or themselves were included. Studies including mixed paediatric and adults were further investigated and data related to paediatric were extracted. Quality assessment will be integrated into the review process using ‘CASP’ checklist at the data extraction stage. The study protocol was registered on PROSPERO.

Results All databases were systematically searched (in April 2018). Overall, 1,018 citations were found; of which 994 remained after removal of duplicates. After screening of titles and abstracts, 46 studies were considered eligible for inclusion in this review. At data extraction stage, 12 studies were excluded, owing to the lack of paediatric specific information or medication-related errors. 34 studies were further investigated, among which, 30 (30/34, 88.2%) studies reported that dosing errors are the most common type of medication errors and are associated with parents or caregivers with inadequate health literacy. Over-the-counter liquid medications and antibiotics are commonly associated with dosing errors among parents and caregivers. Two (2/26, 7.7%) experimental studies indicated that both droppers and cups are the prime causes of dosing errors that occur via parents. Two (2/34, 5.9%) review studies indicated that medication administration errors are common among children with prescribed inhalers. Finally, two (2/34, 5.9%) observational studies identified that labels and information sheets of the medication contribute to medication administration errors.

Conclusion The preliminary findings of this review suggest that further integrated education strategies between healthcare-professionals and parents or caregivers is a priority to reduce medication administration and dosing errors among children and young adults. To our knowledge, limited studies were conducted in the UK about this topic, hence, further work is required to highlight the issue of medication errors among children and its association with parents or caregivers health literacy in the UK.

REFERENCES
1. CASP Appraisal Checklists, [Internet]. 2017 [cited 1st of December]. Available from: https://casp-uk.net/casp-tool-checklists/