R Code for literature review and Data Extraction

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# Data Extraction

An easy guide to PubmedR: <https://cran.r-project.org/web/packages/pubmedR/vignettes/A_Brief_Example.html>

We will primarily be using the PubmedR package, which extracts bibliographic information using the ‘NCBI’ REST API <https://www.ncbi.nlm.nih.gov/home/develop/api/>.

library(pubmedR)

## Warning: package 'pubmedR' was built under R version 4.3.2

## How to Extract Data from Pubmed Searches using PubmedR

This API is free to use and is not required. I used a NULL Key (no key) and the only issue is that this is rate limited.

api\_key <- NULL

You then enter your query. This is a slightly different syntax than what you have when you search in Pubmed, so they do need to be adjusted.

query <- "(((military health services\*[MeSH Terms] OR (military\*[All Fields] AND health\*[All Fields] AND services\*[All Fields]) OR military health services\*[All Fields] OR (military\*[All Fields] AND health\*[All Fields] AND system\*[All Fields]) OR military health system\*[All Fields]) AND (patient satisfaction\*[MeSH Terms] OR (patient\*[All Fields] AND satisfaction\*[All Fields]) OR patient satisfaction\*[All Fields])) AND (fft[Filter])) AND ((2015/01/01[Date - Publication] : 3000[Date - Publication]))"

These two pieces will allow us to pull a query from Pubmed using the pmQueryTotalCount function, which shows the total count of articles in a query. If we want, we cna see the count of articles by calling that variable.

res <- pmQueryTotalCount(query = query, api\_key = api\_key)  
  
res$total\_count

## [1] 299

While these counts are great, what we would really like is the metadata associated with the query. This is done using the pmApiRequest function. The pmApi2df (Pubmed API to Dataframe) function converts that format to a dataframe, an object that allows us to manipulate and transform the data. To ensure that we are getting the data that we want, we can check the structure of the data (str()).

D <- pmApiRequest(query = query, limit = res$total\_count, api\_key = NULL)

## Documents 200 of 299   
## Documents 299 of 299

M <- pmApi2df(D)

## ================================================================================

str(M)

## 'data.frame': 297 obs. of 30 variables:  
## $ AU : chr "WANG Q;MA Y;MAO J;SONG J;XIAO M;ZHAO Q;YUAN F;HU L" "DEWI DAR;ARIMUKO A;NORAWATI L;DEWI RK;WIRAGUNA AAGP;ALLATIB A;ARKANIA N;NADHIRA F;WILIANTARI NM" "HAYS RD;REISE SP;HERMAN PM" "BASHIR U;SIDDIQ G;SALEEM N;FAROOQ H;AWAIS M;USSAMA M;IQBAL H;SHABBIR H;RAFIQ T;BANOORI M" ...  
## $ AF : chr "WANG, QI;MA, YINGJIE;MAO, JIAN;SONG, JINGYAN;XIAO, MINGZHAO;ZHAO, QINGHUA;YUAN, FANG;HU, LEI" "DEWI, DIAN ANDRIANI RATNA;ARIMUKO, ABRAHAM;NORAWATI, LILIK;DEWI, RATNA K;WIRAGUNA, ANAK AGUNG GDE P;ALLATIB, AR"| \_\_truncated\_\_ "HAYS, RON D;REISE, STEVEN P;HERMAN, PATRICIA M" "BASHIR, UMAR;SIDDIQ, GHULAM;SALEEM, NITASHA;FAROOQ, HUMZA;AWAIS, MUHAMMAD;USSAMA, MUHAMMAD;IQBAL, HANIA;SHABBIR"| \_\_truncated\_\_ ...  
## $ TI : chr "DRIVING THE IMPLEMENTATION OF HOSPITAL EXAMINATION RESERVATION SYSTEM THROUGH HOSPITAL MANAGEMENT." "EFFECTIVENESS OF SCLEROTHERAPY TO CURE LOWER LIMB CHRONIC VENOUS INSUFFICIENCY GRADES 1-6: A SYSTEMATIC REVIEW "| \_\_truncated\_\_ "ESTIMATING INDIVIDUAL HEALTH-RELATED QUALITY OF LIFE CHANGES IN LOW BACK PAIN PATIENTS." "FIRST-WORLD CARE AT THIRD-WORLD RATES: PAKISTAN, AN ATTRACTIVE DESTINATION FOR BARIATRIC TOURISM." ...  
## $ SO : chr "BMC HEALTH SERVICES RESEARCH" "CUREUS" "BMC MUSCULOSKELETAL DISORDERS" "CUREUS" ...  
## $ SO\_CO : chr "ENGLAND" "UNITED STATES" "ENGLAND" "UNITED STATES" ...  
## $ LA : chr "ENG" "ENG" "ENG" "ENG" ...  
## $ DT : chr "JOURNAL ARTICLE" "JOURNAL ARTICLE" "JOURNAL ARTICLE" "JOURNAL ARTICLE" ...  
## $ DE : chr "BEHAVIORAL INTENTION;HABIT;HOSPITAL EXAMINATION RESERVATION SYSTEM;HOSPITAL MANAGEMENT;INNOVATION;UTAUT2" "CHRONIC VENOUS INSUFFICIENCY;CLINICAL TRIAL;EFFECTIVENESS;LOWER LIMB;META-ANALYSIS;RANDOMIZED CONTROLLED TRIAL;"| \_\_truncated\_\_ "ESTIMATION;INDIVIDUAL CHANGE;PROMIS®;PATIENT-REPORTED OUTCOMES" "BARIATRIC SURGERY;BARIATRIC TOURISM;GASTRIC BYPASS;MEDICAL TOURISM;OBESITY;SLEEVE GASTRECTOMY;WEIGHT LOSS SURGERY" ...  
## $ ID : chr "HUMANS;FEMALE;HOSPITALS;CHINA;INTENTION;PATIENT SATISFACTION;PRIVACY" "" "ADULT;HUMANS;MALE;FEMALE;QUALITY OF LIFE;LOW BACK PAIN;REPRODUCIBILITY OF RESULTS;RETROSPECTIVE STUDIES;FATIGUE"| \_\_truncated\_\_ "" ...  
## $ MESH : chr "HUMANS;FEMALE;HOSPITALS;CHINA;INTENTION;PATIENT SATISFACTION;PRIVACY" "" "ADULT;HUMANS;MALE;FEMALE;QUALITY OF LIFE;LOW BACK PAIN;REPRODUCIBILITY OF RESULTS;RETROSPECTIVE STUDIES;FATIGUE"| \_\_truncated\_\_ "" ...  
## $ AB : chr "HOSPITAL EXAMINATION RESERVATION SYSTEM (HERS) WAS DESIGNED FOR REDUCING APPOINTMENT EXAMINATION WAITING TIME A"| \_\_truncated\_\_ "CHRONIC VENOUS INSUFFICIENCY IS A MEDICAL CONDITION THAT IMPACTS THE VENOUS SYSTEM IN THE LOWER LIMBS. THE PRIM"| \_\_truncated\_\_ "THERE IS A NEED TO EVALUATE DIFFERENT OPTIONS FOR ESTIMATING INDIVIDUAL CHANGE IN HEALTH-RELATED QUALITY OF LIF"| \_\_truncated\_\_ "INTRODUCTION OBESITY, A COMPLEX AND MULTIFACTORIAL DISEASE, IS DEFINED BY A BODY MASS INDEX (BMI) GREATER THAN "| \_\_truncated\_\_ ...  
## $ C1 : chr "INFORMATION CENTER, THE FIRST AFFILIATED HOSPITAL OF CHONGQING MEDICAL UNIVERSITY, CHONGQING, CHINA.;DEPARTMENT"| \_\_truncated\_\_ "DEPARTMENT OF DERMATOVENEREOLOGY, INDONESIAN DEFENSE UNIVERSITY, BOGOR, IDN.;DEPARTMENT OF DERMATOVENEREOLOGY, "| \_\_truncated\_\_ "DIVISION OF GENERAL INTERNAL MEDICINE & HEALTH SERVICES RESEARCH, UCLA DEPARTMENT OF MEDICINE, 1100 GLENDON AVE"| \_\_truncated\_\_ "SURGERY, SHIFA INTERNATIONAL HOSPITAL ISLAMABAD, ISLAMABAD, PAK.;SURGERY, SHIFA INTERNATIONAL HOSPITAL ISLAMABA"| \_\_truncated\_\_ ...  
## $ CR : chr "NA" "NA" "NA" "NA" ...  
## $ TC : num 0 0 0 0 0 0 0 0 0 0 ...  
## $ SN : chr "1472-6963" "2168-8184" "1471-2474" "2168-8184" ...  
## $ J9 : chr "BMC HEALTH SERV RES" "CUREUS" "BMC MUSCULOSKELET DISORD" "CUREUS" ...  
## $ JI : chr "BMC HEALTH SERV RES" "CUREUS" "BMC MUSCULOSKELET DISORD" "CUREUS" ...  
## $ PY : num 2023 2023 2023 2023 2023 ...  
## $ PY\_IS : chr "2024" "2023" "2023" "2023" ...  
## $ VL : chr "24" "15" "24" "15" ...  
## $ DI : chr "10.1186/s12913-023-10467-x" "10.7759/cureus.49770" "10.1186/s12891-023-07093-3" "10.7759/cureus.48572" ...  
## $ PG : chr "44" "E49770" "961" "E48572" ...  
## $ GRANT\_ID : chr "ZHYX202128;2021MSXM147" "" "1R01AT010402-01A1;1R01AT010402-01A1" "" ...  
## $ GRANT\_ORG: chr "CHONGQING MEDICAL UNIVERSITY;JOINT PROJECT OF CHONGQING HEALTH COMMISSION AND SCIENCE AND TECHNOLOGY BUREAU" "" "NCCIH NIH HHS;NCCIH NIH HHS" "" ...  
## $ UT : chr "38195476" "38164304" "38082389" "38074012" ...  
## $ PMID : chr "38195476" "38164304" "38082389" "38074012" ...  
## $ DB : chr "PUBMED" "PUBMED" "PUBMED" "PUBMED" ...  
## $ AU\_UN : chr "INFORMATION CENTER, THE FIRST AFFILIATED HOSPITAL OF CHONGQING MEDICAL UNIVERSITY, CHONGQING, CHINA.;DEPARTMENT"| \_\_truncated\_\_ "DEPARTMENT OF DERMATOVENEREOLOGY, INDONESIAN DEFENSE UNIVERSITY, BOGOR, IDN.;DEPARTMENT OF DERMATOVENEREOLOGY, "| \_\_truncated\_\_ "DIVISION OF GENERAL INTERNAL MEDICINE & HEALTH SERVICES RESEARCH, UCLA DEPARTMENT OF MEDICINE, 1100 GLENDON AVE"| \_\_truncated\_\_ "SURGERY, SHIFA INTERNATIONAL HOSPITAL ISLAMABAD, ISLAMABAD, PAK.;SURGERY, SHIFA INTERNATIONAL HOSPITAL ISLAMABA"| \_\_truncated\_\_ ...  
## $ AU\_CO : chr "NA" "NA" "NA" "NA" ...  
## $ AU1\_CO : chr "NA" "NA" "NA" "NA" ...

There are 36 variables, which can be used to create a dataframe with just the variables we need. For our dataframe, I called Author, Title, Source Country, Abstract, and Pubmed ID. You can then easily save this dataframe as a CSV to be opened in excel.

Pubmedquery <- M[, c("AU", "TI", "SO\_CO", "AB", "PMID")]  
  
#write.csv(Pubmedquery, "Pubmed\_Military\_Health\_Query\_001.csv")

This is a basic way of extracting data from Pubmed.

# Literature Review Search Optimization using LitsearchR

LitsearchR Documentation: <https://elizagrames.github.io/litsearchr/#tutorials>

Another great LitSearchR resource: <https://luketudge.github.io/litsearchr-tutorial/litsearchr_tutorial.html#Setup>

library(dplyr)

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

library(ggplot2)

## Warning: package 'ggplot2' was built under R version 4.3.2

library(ggraph)

## Warning: package 'ggraph' was built under R version 4.3.2

library(igraph)

## Warning: package 'igraph' was built under R version 4.3.2

##   
## Attaching package: 'igraph'

## The following objects are masked from 'package:dplyr':  
##   
## as\_data\_frame, groups, union

## The following objects are masked from 'package:stats':  
##   
## decompose, spectrum

## The following object is masked from 'package:base':  
##   
## union

library(readr)  
library(litsearchr)

Unlike PubmedR where a query can be called from R, LitsearchR reads in an nlbl file. When performing a Pubmed search, this can be exported when you select Send To and then Citation Software. These are imported, the number of results can be checked using nrow, and we can check that we have all that we need in the data using the str and head functions (str shows variable structure, head shows the first 6 results).

naive\_results <- import\_results(file="C:/Users/DominikaOliver/Downloads/pubmed-militaries-set.nbib")

## Reading file C:/Users/DominikaOliver/Downloads/pubmed-militaries-set.nbib ... done

#number of rows  
nrow(naive\_results)

## [1] 671

#shows results  
head(naive\_results)

## publication\_type language  
## 1 Journal Article eng  
## 2 Journal Article eng  
## 3 Journal Article and Research Support, Non-U.S. Gov't and Review eng  
## 4 Journal Article and Review eng  
## 5 Journal Article eng  
## 6 Journal Article and Review eng  
## status  
## 1 MEDLINE and ppublish  
## 2 MEDLINE and ppublish  
## 3 MEDLINE and ppublish  
## 4 MEDLINE and ppublish  
## 5 PubMed-not-MEDLINE and epublish  
## 6 MEDLINE and ppublish  
## author  
## 1 Gliner M and Dorris J and Aiyelawo K and Morris E and Hurdle-Rabb D and Frazier C  
## 2 Szpilewska K and Juzwiszyn J and Bolanowska Z and Bolanowska Z and Milan M and Chabowski M and Janczak D  
## 3 Mazzoni SE and Carter EB  
## 4 Antosh IJ and Tokish JM and Owens BD  
## 5 Immerman SC  
## 6 Sherlock LP and Eisenman DJ  
## author\_full  
## 1 Gliner, Melissa and Dorris, Joe and Aiyelawo, Kimberley and Morris, Erica and Hurdle-Rabb, Danielle and Frazier, Chantell  
## 2 Szpilewska, Katarzyna and Juzwiszyn, Jan and Bolanowska, Zofia and Bolanowska, Zofia and Milan, Magdalena and Chabowski, Mariusz and Janczak, Dariusz  
## 3 Mazzoni, Sara E and Carter, Ebony B  
## 4 Antosh, Ivan J and Tokish, John M and Owens, Brett D  
## 5 Immerman, Steven C  
## 6 Sherlock, LaGuinn P and Eisenman, David J  
## address  
## 1 Analytics and Evaluation Division (J-5), Defense Health Agency (DHA), Falls Church, Virginia (Drs Gliner and Aiyelawo); Center for Military and Veterans Health, Altarum, Ann Arbor, Michigan (Mr Dorris); Center for Military and Veterans Health, Altarum, Washington, District of Columbia (Mss Morris and Hurdle-Rabb); and Center for Behavioral Health, Altarum, Washington, District of Columbia (Dr Frazier).  
## 2 Division of Surgical Specialties, Dept of Clinical Nursing, Faculty of Health Science, Wroclaw Medical University, 5 Bartla Street, 51-618 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak and Division of Surgical Specialties, Dept of Clinical Nursing, Faculty of Health Science, Wroclaw Medical University, 5 Bartla Street, 51-618 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak and Division of Surgical Specialties, Dept of Clinical Nursing, Faculty of Health Science, Wroclaw Medical University, 5 Bartla Street, 51-618 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak and Division of Surgical Specialties, Dept of Clinical Nursing, Faculty of Health Science, Wroclaw Medical University, 5 Bartla Street, 51-618 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak and Division of Surgical Specialties, Dept of Clinical Nursing, Faculty of Health Science, Wroclaw Medical University, 5 Bartla Street, 51-618 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak 2Dept of Surgery, 4th Military Teaching and Division of Surgical Specialties, Dept of Clinical Nursing, Faculty of Health Science, Wroclaw Medical University, 5 Bartla Street, 51-618 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak Dept of Surgery, 4th Military Teaching Hospital, 5 Weigla street, 50-981 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak and Division of Surgical Specialties, Dept of Clinical Nursing, Faculty of Health Science, Wroclaw Medical University, 5 Bartla Street, 51-618 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak Dept of Surgery, 4th Military Teaching Hospital, 5 Weigla street, 50-981 Wroclaw, Poland, Head: prof dr hab med Dariusz Janczak.  
## 3 Department of Obstetrics and Gynecology, Divisions of Women's Reproductive Healthcare and Maternal-Fetal Medicine, University of Alabama at Birmingham, Birmingham, AL and Electronic address: smazzoni@uabmc.edu and Department of Obstetrics and Gynecology, Division of Maternal-Fetal Medicine, Washington University School of Medicine, St Louis, MO.  
## 4 Keller Army Hospital, West Point, New York and Steadman-Hawkins Clinic of the Carolinas, Spartanburg, South Carolina and Brown University Alpert Medical School, Providence, Rhode Island.  
## 5 Surgery, Evergreen Surgical, Eau Claire, USA.  
## 6 Army Hearing Program, US Army Public Health Center, Aberdeen, MD, USA; Audiology and Speech Pathology Center, Walter Reed National Military Medical Center, Bethesda, MD, USA and Electronic address: laguinnsherlock@gmail.com and Department of Otorhinolaryngology-Head and Neck Surgery, University of Maryland School of Medicine, 16 South Eutaw Street Suite 500, Baltimore, MD 21201, USA.  
## date\_created date\_revised date\_completed date\_added date\_published  
## 1 2021/06/03 17:17 20230929 20220203 2021/06/04 06:00 2022 Mar-Apr 01  
## 2 2018/03/08 06:00 20180919 20180919 2018/03/08 06:00 2018 Feb 28  
## 3 2017/02/13 06:00 20220317 20170804 2017/02/13 06:00 2017 Jun  
## 4 2016/10/05 06:00 20220321 20170809 2016/10/05 06:00 2016 Nov/Dec  
## 5 2021/10/15 06:37 20211016 <NA> 2021/10/16 06:00 2021 Sep  
## 6 2020/04/27 06:00 20210405 20210405 2020/04/27 06:00 2020 Aug  
## publication\_history\_status  
## 1 2021/06/04 06:00 [pubmed] and 2022/02/04 06:00 [medline] and 2021/06/03 17:17 [entrez]  
## 2 2018/03/08 06:00 [entrez] and 2018/03/08 06:00 [pubmed] and 2018/09/20 06:00 [medline]  
## 3 2016/11/23 00:00 [received] and 2017/01/26 00:00 [revised] and 2017/02/06 00:00 [accepted] and 2017/02/13 06:00 [pubmed] and 2017/08/05 06:00 [medline] and 2017/02/13 06:00 [entrez]  
## 4 2016/10/05 06:00 [pubmed] and 2017/08/10 06:00 [medline] and 2016/10/05 06:00 [entrez]  
## 5 2021/09/03 00:00 [accepted] and 2021/10/15 06:37 [entrez] and 2021/10/16 06:00 [pubmed] and 2021/10/16 06:01 [medline]  
## 6 2020/04/27 06:00 [pubmed] and 2021/04/07 06:00 [medline] and 2020/04/27 06:00 [entrez]  
## title  
## 1 Patient Falls, Nurse Communication, and Nurse Hourly Rounding in Acute Care: Linking Patient Experience and Outcomes.  
## 2 Acceptance of disease and the quality of life in patients with enteric stoma.  
## 3 Group prenatal care.  
## 4 Posterior Shoulder Instability.  
## 5 Patient Satisfaction After the Cleft-Lift Procedure.  
## 6 Current Device-based Clinical Treatments for Tinnitus.  
## journal  
## 1 Journal of public health management and practice : JPHMP  
## 2 Polski przeglad chirurgiczny  
## 3 American journal of obstetrics and gynecology  
## 4 Sports health  
## 5 Cureus  
## 6 Otolaryngologic clinics of North America  
## journal\_abbreviated  
## 1 J Public Health Manag Pract  
## 2 Pol Przegl Chir  
## 3 Am J Obstet Gynecol  
## 4 Sports Health  
## 5 Cureus  
## 6 Otolaryngol Clin North Am  
## source  
## 1 J Public Health Manag Pract. 2022 Mar-Apr 01;28(2):E467-E470. doi: and 10.1097/PHH.0000000000001387.  
## 2 Pol Przegl Chir. 2018 Feb 28;90(1):13-17. doi: 10.5604/01.3001.0011.5954.  
## 3 Am J Obstet Gynecol. 2017 Jun;216(6):552-556. doi: 10.1016/j.ajog.2017.02.006. and Epub 2017 Feb 9.  
## 4 Sports Health. 2016 Nov/Dec;8(6):520-526. doi: 10.1177/1941738116672446. Epub and 2016 Oct 4.  
## 5 Cureus. 2021 Sep 3;13(9):e17686. doi: 10.7759/cureus.17686. eCollection 2021 Sep.  
## 6 Otolaryngol Clin North Am. 2020 Aug;53(4):627-636. doi: and 10.1016/j.otc.2020.03.010. Epub 2020 Apr 23.  
## volume  
## 1 28  
## 2 90  
## 3 216  
## 4 8  
## 5 13  
## 6 53  
## issue  
## 1 1550-5022 (Electronic) and 1078-4659 (Linking) and 2  
## 2 2299-2847 (Electronic) and 0032-373X (Linking) and 1  
## 3 1097-6868 (Electronic) and 0002-9378 (Linking) and 6  
## 4 1941-0921 (Electronic) and 1941-7381 (Print) and 1941-0921 (Linking) and 6  
## 5 2168-8184 (Print) and 2168-8184 (Electronic) and 2168-8184 (Linking) and 9  
## 6 1557-8259 (Electronic) and 0030-6665 (Linking) and 4  
## pages  
## 1 E467-E470  
## 2 13-17  
## 3 552-556  
## 4 520-526  
## 5 e17686  
## 6 627-636  
## abstract  
## 1 Research has consistently found a link between hourly nurse rounding and patient outcomes, including reduced falls, reduced pressure ulcers, reduced call light usage, and improved patient experience; however, little research exists specific to patient falls and nurse rounding in acute care settings. This study adds to the body of knowledge by statistically quantifying and providing linkages between nurse rounding frequency and patient fall rates using data from 31 military treatment facilities comprehensively over a period from fiscal year (FY) 2017 through FY2019. Poisson regression results indicated that hourly nurse rounding was associated with a reduction of more than 21% in fall rates (incidence rate ratio = 0.79, P < .01) relative to infrequent rounding, and poorly rated nurse communication was associated with an 8.6-fold increase in patient fall rates relative to highly rated nurse communication (incidence rate ratio = 8.6, P < .01).  
## 2 INTRODUCTION: The main reason of the emergence of enteric stoma is colorectal cancer. Enteric stoma is a serious health, as well as life problem. In Poland, there are about 6,000 stoma surgeries yearly. It changes the functioning of patients, restricts their daily activity and influences their quality of life significantly. Therefore, in the modern treatment process, all spheres of human life and its surroundings are considered. The evaluation of the quality of life and the level of acceptance of the disease enables us to identify the regions in which patients require attention and help, as well as places to which health promotion among patients with a stoma should be directed. The aim of the study was the evaluation of the acceptance of the disease and the quality of life in patients with colostomy. MATERIAL AND METHODS: The study conducted between February 2015 and February 2016 included101 patients with enteric stoma of the Provincial Specialist Hospital in Wrocław at Kamieńskiego St. in the departments of General Surgery with the Subdivision of Traumatology and Orthopedic Surgery, Subdivision of Metabolic Surgery, Subdivision of Endocrine Surgery and Oncological Surgery . Two anonymous questionnaires, i.e., health-related quality of life (HRQoL) and acceptance of illness scale (AIS), were used. 60% (61 people) were women, and 40% (40 people) were men. The mean age was 48; the youngest respondent was 20 years old, and the oldest was 79 years old. 17% of the respondents had primary education, 25% - vocational, 33% - secondary and 26% - university-level. RESULTS: The most common reason for the emergence of a stoma among the respondents was colon cancer (44%), followed by: mechanical bowel onstruction (26%), intestinal damage following injuries (25%), inflammatory bowel disease (6%). The quality of life of patients with colostomy was evaluated in view of their health condition, postoperative recovery, everyday limitations, and self-evaluation. The majority of participants pointed to the deterioration of their quality of life. A higher level of acceptance of the disease was revealed in men as 75% of men, and 61% of women acceptted their health status. The education level also influences the acceptance of the disease, as 41% participants with higher education, and only 6% participants with primary education did not accept their health status. We revealed some social factors influencing the quality of life and the acceptance of the disease, i.e., gender, age, education, job, and place of living. CONCLUSIONS: Gender and education have an impact on the level of the acceptance of the disease, but they do not influence the quality of life. The acceptance of the disease is connected with the quality of life in patients with a stoma. The higher the level of acceptance of the disease, the better the quality of life. Research indicates the need to deepen patients' education regarding their functioning in society.  
## 3 Patients participating in group prenatal care gather together with women of similar gestational ages and 2 providers who cofacilitate an educational session after a brief medical assessment. The model was first described in the 1990s by a midwife for low-risk patients and is now practiced by midwives and physicians for both low-risk patients and some high-risk patients, such as those with diabetes. The majority of literature on group prenatal care uses CenteringPregnancy, the most popular model. The first randomized controlled trial of CenteringPregnancy showed that it reduced the risk of preterm birth in low-risk women. However, recent meta-analyses have shown similar rates of preterm birth, low birthweight, and neonatal intensive care unit admission between women participating in group prenatal care and individual prenatal care. There may be subgroups, such as African Americans, who benefit from this type of prenatal care with significantly lower rates of preterm birth. Group prenatal care seems to result in increased patient satisfaction and knowledge and use of postpartum family planning as well as improved weight gain parameters. The literature is inconclusive regarding breast-feeding, stress, depression, and positive health behaviors, although it is theorized that group prenatal care positively affects these outcomes. It is unclear whether group prenatal care results in cost savings, although it may in large-volume practices if each group consists of approximately 8-10 women. Group prenatal care requires a significant paradigm shift. It can be difficult to implement and sustain. More randomized trials are needed to ascertain the true benefits of the model, best practices for implementation, and subgroups who may benefit most from this innovative way to provide prenatal care. In short, group prenatal care is an innovative and promising model with comparable pregnancy outcomes to individual prenatal care in the general population and improved outcomes in some demographic groups.  
## 4 CONTEXT: Posterior shoulder instability has become more frequently recognized and treated as a unique subset of shoulder instability, especially in the military. Posterior shoulder pathology may be more difficult to accurately diagnose than its anterior counterpart, and commonly, patients present with complaints of pain rather than instability. "Posterior instability" may encompass both dislocation and subluxation, and the most common presentation is recurrent posterior subluxation. Arthroscopic and open treatment techniques have improved as understanding of posterior shoulder instability has evolved. EVIDENCE ACQUISITION: Electronic databases including PubMed and MEDLINE were queried for articles relating to posterior shoulder instability. STUDY DESIGN: Clinical review. LEVEL OF EVIDENCE: Level 4. RESULTS: In low-demand patients, nonoperative treatment of posterior shoulder instability should be considered a first line of treatment and is typically successful. Conservative treatment, however, is commonly unsuccessful in active patients, such as military members. Those patients with persistent shoulder pain, instability, or functional limitations after a trial of conservative treatment may be considered surgical candidates. Arthroscopic posterior shoulder stabilization has demonstrated excellent clinical outcomes, high patient satisfaction, and low complication rates. Advanced techniques may be required in select cases to address bone loss, glenoid dysplasia, or revision. CONCLUSION: Posterior instability represents about 10% of shoulder instability and has become increasingly recognized and treated in military members. Nonoperative treatment is commonly unsuccessful in active patients, and surgical stabilization can be considered in patients who do not respond. Isolated posterior labral repairs constitute up to 24% of operatively treated labral repairs in a military population. Arthroscopic posterior stabilization is typically considered as first-line surgical treatment, while open techniques may be required in complex or revision settings.  
## 5 Introduction Although Pilonidal disease is rarely life-threatening, it is a painful and potentially embarrassing condition that if left untreated or treated poorly, can disrupt a patient's ability to enjoy life, function at work, develop relationships, or attend school or the military. There are several different approaches to this problem which include non-surgical measures, minimally invasive surgery, excisional surgery, or flap surgery. This article relates the experience with a surgical practice that offers only the cleft lift procedure and describes the degree of patient satisfaction with the operation. Materials and Methods Seven hundred and fifty-one patients were treated between 2011 and 2021. Surveys were sent out to these patients by email after at least eight weeks had elapsed from surgery. The study was closed once 500 responses were obtained. Statistical analysis was performed to determine if patients who had undergone previous pilonidal surgery (salvage group) had different opinions than the patients who did not (primary group). Results Of the 500 respondents, 494 (98.8%) were "extremely satisfied" or "satisfied" with their procedure; 444 (88.8%) felt that the recovery process was "very easy" or "easy" and only 56 (11.2%) felt that it was "difficult but worth it" or "really hard". Four hundred and one (80.2%) felt that the activity restrictions were "minimal, I was back to normal activity very quickly"; 438 (89.4%) felt that the scar looked "really good" or answered, "it's fine, not an issue for me. I'm just glad to be done with this". Whether the patients had previous failed surgery or not, the vast majority (78.2% and 79.6% respectively) felt that the cleft lift was an appropriate first operation for pilonidal disease; and statistical analysis failed to show any significant differences in opinions between the primary and salvage groups on any of the questions. The few patients who ultimately were dissatisfied with the procedure were unhappy with the cosmetic appearance of the scar and shape of the buttocks. By comparing the demographic characteristics of the respondents to the entire cohort, we found them to be similar groups, suggesting that the respondents were representative of the group as a whole. Conclusion A correctly performed cleft lift operation provides a solution that is very well accepted by patients, specifically in regard to recovery time, appearance, appropriateness, and overall satisfaction.  
## 6 Device-based clinical treatments for tinnitus are predominantly sound based and include ear-level sound generators, hearing aids, cochlear implants, and tinnitus treatment devices. They are intended for patients with bothersome tinnitus. Bothersome tinnitus is characterized by problems with sleep, concentration, and mood. Most people with bothersome tinnitus have hearing loss and would benefit from amplification; however, not all patients are willing to use hearing aids. Tinnitus treatment devices are available to assist those who are not good candidates for amplification, and include devices used while sleeping and devices used for specified periods during the day.  
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## 3 Adolescent and Family Planning Services and Female and Gestational Age and Health Status and Humans and Infant, Low Birth Weight and Intensive Care, Neonatal/statistics & numerical data and Midwifery and Military Personnel and Minority Groups and Obstetrics/methods and Patient Education as Topic/\*methods and Physicians and Postpartum Period and Pregnancy and Pregnancy Outcome and Pregnancy in Adolescence and Premature Birth/epidemiology and Prenatal Care/\*methods and Risk Factors  
## 4 \*Arthroscopy and Humans and Joint Dislocations/diagnostic imaging/pathology/\*surgery and Joint Instability/diagnostic imaging/pathology/\*surgery and Magnetic Resonance Imaging and \*Military Personnel and Range of Motion, Articular and Recurrence and Shoulder Dislocation/diagnostic imaging/pathology/\*surgery and Shoulder Joint and Tomography, X-Ray Computed and Treatment Outcome  
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## 1 The authors have no potential conflicts of interest to disclose.  
## 2 <NA>  
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## 4 The following authors declared potential conflicts of interest: John M. Tokish, and MD, is a paid consultant for Arthrex and Depuy-Mitek and Brett D. Owens, MD, is a and paid consultant for Mitek and MTF/Conmed.  
## 5 The authors have declared that no competing interests exist.  
## 6 Disclosure The authors have nothing to disclose.  
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## [43] "limb salvage"   
## [44] "lived experience"   
## [45] "lower extremity"   
## [46] "maternal preference"   
## [47] "median sternotomy"   
## [48] "mental health"   
## [49] "military health"   
## [50] "military medicine"   
## [51] "military personnel"   
## [52] "military sexual assault"   
## [53] "mobile application"   
## [54] "mobile health"   
## [55] "mode of delivery"   
## [56] "multiple sclerosis"   
## [57] "nonoperative treatment"   
## [58] "observational study"   
## [59] "obstructive sleep apnea"   
## [60] "pain intensity"   
## [61] "pain management"   
## [62] "patient-centered care"   
## [63] "patient-reported outcome"   
## [64] "patient-reported outcome measures"   
## [65] "patient-reported outcomes"   
## [66] "patient education"   
## [67] "patient experience"   
## [68] "patient outcomes"   
## [69] "patient preference"   
## [70] "patient preferences"   
## [71] "patient safety"   
## [72] "patient satisfaction"   
## [73] "pelvic organ prolapse"   
## [74] "photodynamic therapy"   
## [75] "physical therapy"   
## [76] "pilonidal sinus"   
## [77] "plastic surgery"   
## [78] "post-traumatic stress disorder"   
## [79] "posttraumatic stress disorder"   
## [80] "primary care"   
## [81] "public health"   
## [82] "qualitative research"   
## [83] "quality improvement"   
## [84] "quality in health care"   
## [85] "quality of care"   
## [86] "quality of life"   
## [87] "regional anesthesia"   
## [88] "relationship satisfaction"   
## [89] "renal cell carcinoma"   
## [90] "rheumatoid arthritis"   
## [91] "robotic surgery"   
## [92] "sacral hysteropexy"   
## [93] "saudi arabia"   
## [94] "service member"   
## [95] "sexual dysfunction"   
## [96] "sexual orientation"   
## [97] "sexual trauma"   
## [98] "shared decision-making"   
## [99] "skin aging"   
## [100] "sodium bicarbonate"   
## [101] "spine surgery"   
## [102] "sports medicine"   
## [103] "surgical treatment"   
## [104] "systematic review"   
## [105] "telemental health"   
## [106] "topical photodynamic therapy"   
## [107] "total knee arthroplasty"   
## [108] "trauma management"   
## [109] "traumatic brain injury"   
## [110] "treatment satisfaction"   
## [111] "type 1 diabetes"   
## [112] "type 2 diabetes"   
## [113] "upper limb"   
## [114] "users’ experiences"   
## [115] "vaginal delivery"   
## [116] "vascular access"   
## [117] "vulnerable populations"   
## [118] "women veterans"   
## [119] "women’s health"   
## [120] "work environment"

Title and Abstract: Create a list of terms that can be used as keywords.

#Extract interesting words from titles  
extract\_terms(text=naive\_results[, "title"], method="fakerake", min\_freq=3, min\_n=2)

## [1] "active military"   
## [2] "armed forces"   
## [3] "atlantoaxial dislocation"   
## [4] "behavioral health"   
## [5] "blood glucose"   
## [6] "bowel preparation"   
## [7] "brain injury"   
## [8] "breast cancer"   
## [9] "breast cancer patients"   
## [10] "breast reconstruction"   
## [11] "canadian armed"   
## [12] "canadian armed forces"   
## [13] "cancer patients"   
## [14] "chinese patients"   
## [15] "chronic exertional"   
## [16] "chronic exertional compartment"   
## [17] "chronic exertional compartment syndrome"   
## [18] "clinical characteristics"   
## [19] "clinical efficacy"   
## [20] "clinical outcomes"   
## [21] "clinical practice"   
## [22] "clinical study"   
## [23] "clinical trial"   
## [24] "clinical trials"   
## [25] "cohort study"   
## [26] "compartment syndrome"   
## [27] "controlled study"   
## [28] "controlled trial"   
## [29] "covid-19 pandemic"   
## [30] "cross-sectional study"   
## [31] "diabetes mellitus"   
## [32] "disorder treatment"   
## [33] "emergency department"   
## [34] "enhanced recovery"   
## [35] "european society"   
## [36] "exertional compartment"   
## [37] "exertional compartment syndrome"   
## [38] "factors influencing"   
## [39] "femoroacetabular impingement"   
## [40] "flash glucose"   
## [41] "flash glucose monitoring"   
## [42] "functional outcomes"   
## [43] "gastroesophageal reflux"   
## [44] "gastroesophageal reflux disease"   
## [45] "gastrointestinal endoscopy"   
## [46] "glucose monitoring"   
## [47] "glucose monitoring system"   
## [48] "group prenatal"   
## [49] "health administration"   
## [50] "health outcomes"   
## [51] "health service"   
## [52] "health services"   
## [53] "health system"   
## [54] "health treatment"   
## [55] "healthcare system"   
## [56] "heart disease"   
## [57] "impingement syndrome"   
## [58] "improvement initiative"   
## [59] "informed consent"   
## [60] "inpatient satisfaction"   
## [61] "intravenous analgesia"   
## [62] "laparoscopic cholecystectomy"   
## [63] "laparoscopic sacrocolpopexy"   
## [64] "laser therapy"   
## [65] "lumbar discectomy"   
## [66] "medical center"   
## [67] "medically unexplained"   
## [68] "mental health"   
## [69] "methods study"   
## [70] "military health"   
## [71] "military health system"   
## [72] "military healthcare"   
## [73] "military healthcare system"   
## [74] "military hospital"   
## [75] "military personnel"   
## [76] "military population"   
## [77] "military readiness"   
## [78] "military service"   
## [79] "military sexual"   
## [80] "military sexual trauma"   
## [81] "military treatment"   
## [82] "military treatment facilities"   
## [83] "military treatment facility"   
## [84] "military veterans"   
## [85] "minimally invasive"   
## [86] "mixed methods"   
## [87] "mixed methods study"   
## [88] "mobile application"   
## [89] "monitoring system"   
## [90] "multicenter clinical"   
## [91] "multicenter study"   
## [92] "multiple sclerosis"   
## [93] "neurosurgical enhanced"   
## [94] "neurosurgical enhanced recovery"   
## [95] "observational study"   
## [96] "organ prolapse"   
## [97] "patient-reported outcomes"   
## [98] "patient comfort"   
## [99] "patient experience"   
## [100] "patient perceptions"   
## [101] "patient preference"   
## [102] "patient preferences"   
## [103] "patient satisfaction"   
## [104] "patient satisfaction survey"   
## [105] "patients undergoing"   
## [106] "pelvic organ"   
## [107] "pelvic organ prolapse"   
## [108] "photodynamic therapy"   
## [109] "physical therapists"   
## [110] "pilonidal sinus"   
## [111] "pilot study"   
## [112] "polyethylene glycol"   
## [113] "post-traumatic stress"   
## [114] "post-traumatic stress disorder"   
## [115] "posttraumatic stress"   
## [116] "posttraumatic stress disorder"   
## [117] "prospective randomized"   
## [118] "prospective randomized controlled"   
## [119] "prospective randomized trial"   
## [120] "prospective study"   
## [121] "qualitative study"   
## [122] "quality improvement"   
## [123] "quality improvement initiative"   
## [124] "radiofrequency ablation"   
## [125] "randomised clinical"   
## [126] "randomized clinical"   
## [127] "randomized clinical trial"   
## [128] "randomized controlled"   
## [129] "randomized controlled study"   
## [130] "randomized controlled trial"   
## [131] "randomized trial"   
## [132] "reducible atlantoaxial"   
## [133] "reducible atlantoaxial dislocation"   
## [134] "reflux disease"   
## [135] "regional anesthesia"   
## [136] "replacement therapy"   
## [137] "retrospective cohort"   
## [138] "retrospective study"   
## [139] "rheumatoid arthritis"   
## [140] "satisfaction survey"   
## [141] "saudi arabia"   
## [142] "service members"   
## [143] "sexual trauma"   
## [144] "stress disorder"   
## [145] "stress disorder treatment"   
## [146] "study protocol"   
## [147] "systematic review"   
## [148] "teaching hospital"   
## [149] "telemental health"   
## [150] "traumatic brain"   
## [151] "traumatic brain injury"   
## [152] "traumatic injuries"   
## [153] "treating reducible"   
## [154] "treating reducible atlantoaxial"   
## [155] "treating reducible atlantoaxial dislocation"  
## [156] "treatment facilities"   
## [157] "treatment facility"   
## [158] "treatment outcomes"   
## [159] "treatment program"   
## [160] "treatment satisfaction"   
## [161] "united states"   
## [162] "veterans affairs"   
## [163] "veterans health"   
## [164] "veterans health administration"   
## [165] "women veterans"

#Create a list of stopwords. This is the generic list, but we can also create our own and bind it to our generic stopword list by reading in a text file.   
all\_stopwords <- get\_stopwords("English")  
  
#This creates that list of titles.   
  
title\_terms <- extract\_terms(  
 text=naive\_results[, "title"],  
 method="fakerake",  
 min\_freq=3, min\_n=2,  
 stopwords=all\_stopwords  
)  
  
title\_terms

## [1] "active military"   
## [2] "armed forces"   
## [3] "atlantoaxial dislocation"   
## [4] "behavioral health"   
## [5] "blood glucose"   
## [6] "bowel preparation"   
## [7] "brain injury"   
## [8] "breast cancer"   
## [9] "breast cancer patients"   
## [10] "breast reconstruction"   
## [11] "canadian armed"   
## [12] "canadian armed forces"   
## [13] "cancer patients"   
## [14] "chinese patients"   
## [15] "chronic exertional"   
## [16] "chronic exertional compartment"   
## [17] "chronic exertional compartment syndrome"   
## [18] "clinical characteristics"   
## [19] "clinical efficacy"   
## [20] "clinical outcomes"   
## [21] "clinical practice"   
## [22] "clinical study"   
## [23] "clinical trial"   
## [24] "clinical trials"   
## [25] "cohort study"   
## [26] "compartment syndrome"   
## [27] "controlled study"   
## [28] "controlled trial"   
## [29] "covid-19 pandemic"   
## [30] "cross-sectional study"   
## [31] "diabetes mellitus"   
## [32] "disorder treatment"   
## [33] "emergency department"   
## [34] "enhanced recovery"   
## [35] "european society"   
## [36] "exertional compartment"   
## [37] "exertional compartment syndrome"   
## [38] "factors influencing"   
## [39] "femoroacetabular impingement"   
## [40] "flash glucose"   
## [41] "flash glucose monitoring"   
## [42] "functional outcomes"   
## [43] "gastroesophageal reflux"   
## [44] "gastroesophageal reflux disease"   
## [45] "gastrointestinal endoscopy"   
## [46] "glucose monitoring"   
## [47] "glucose monitoring system"   
## [48] "group prenatal"   
## [49] "health administration"   
## [50] "health outcomes"   
## [51] "health service"   
## [52] "health services"   
## [53] "health system"   
## [54] "health treatment"   
## [55] "healthcare system"   
## [56] "heart disease"   
## [57] "impingement syndrome"   
## [58] "improvement initiative"   
## [59] "informed consent"   
## [60] "inpatient satisfaction"   
## [61] "intravenous analgesia"   
## [62] "laparoscopic cholecystectomy"   
## [63] "laparoscopic sacrocolpopexy"   
## [64] "laser therapy"   
## [65] "lumbar discectomy"   
## [66] "medical center"   
## [67] "medically unexplained"   
## [68] "mental health"   
## [69] "methods study"   
## [70] "military health"   
## [71] "military health system"   
## [72] "military healthcare"   
## [73] "military healthcare system"   
## [74] "military hospital"   
## [75] "military personnel"   
## [76] "military population"   
## [77] "military readiness"   
## [78] "military service"   
## [79] "military sexual"   
## [80] "military sexual trauma"   
## [81] "military treatment"   
## [82] "military treatment facilities"   
## [83] "military treatment facility"   
## [84] "military veterans"   
## [85] "minimally invasive"   
## [86] "mixed methods"   
## [87] "mixed methods study"   
## [88] "mobile application"   
## [89] "monitoring system"   
## [90] "multicenter clinical"   
## [91] "multicenter study"   
## [92] "multiple sclerosis"   
## [93] "neurosurgical enhanced"   
## [94] "neurosurgical enhanced recovery"   
## [95] "observational study"   
## [96] "organ prolapse"   
## [97] "patient-reported outcomes"   
## [98] "patient comfort"   
## [99] "patient experience"   
## [100] "patient perceptions"   
## [101] "patient preference"   
## [102] "patient preferences"   
## [103] "patient satisfaction"   
## [104] "patient satisfaction survey"   
## [105] "patients undergoing"   
## [106] "pelvic organ"   
## [107] "pelvic organ prolapse"   
## [108] "photodynamic therapy"   
## [109] "physical therapists"   
## [110] "pilonidal sinus"   
## [111] "pilot study"   
## [112] "polyethylene glycol"   
## [113] "post-traumatic stress"   
## [114] "post-traumatic stress disorder"   
## [115] "posttraumatic stress"   
## [116] "posttraumatic stress disorder"   
## [117] "prospective randomized"   
## [118] "prospective randomized controlled"   
## [119] "prospective randomized trial"   
## [120] "prospective study"   
## [121] "qualitative study"   
## [122] "quality improvement"   
## [123] "quality improvement initiative"   
## [124] "radiofrequency ablation"   
## [125] "randomised clinical"   
## [126] "randomized clinical"   
## [127] "randomized clinical trial"   
## [128] "randomized controlled"   
## [129] "randomized controlled study"   
## [130] "randomized controlled trial"   
## [131] "randomized trial"   
## [132] "reducible atlantoaxial"   
## [133] "reducible atlantoaxial dislocation"   
## [134] "reflux disease"   
## [135] "regional anesthesia"   
## [136] "replacement therapy"   
## [137] "retrospective cohort"   
## [138] "retrospective study"   
## [139] "rheumatoid arthritis"   
## [140] "satisfaction survey"   
## [141] "saudi arabia"   
## [142] "service members"   
## [143] "sexual trauma"   
## [144] "stress disorder"   
## [145] "stress disorder treatment"   
## [146] "study protocol"   
## [147] "systematic review"   
## [148] "teaching hospital"   
## [149] "telemental health"   
## [150] "traumatic brain"   
## [151] "traumatic brain injury"   
## [152] "traumatic injuries"   
## [153] "treating reducible"   
## [154] "treating reducible atlantoaxial"   
## [155] "treating reducible atlantoaxial dislocation"  
## [156] "treatment facilities"   
## [157] "treatment facility"   
## [158] "treatment outcomes"   
## [159] "treatment program"   
## [160] "treatment satisfaction"   
## [161] "united states"   
## [162] "veterans affairs"   
## [163] "veterans health"   
## [164] "veterans health administration"   
## [165] "women veterans"

#Let's combine our keywords into one list  
terms <- unique(c(keywords, title\_terms))

One way to do this is to analyze the search terms as a network. The idea behind this is that terms are linked to each other by virtue of appearing in the same articles.

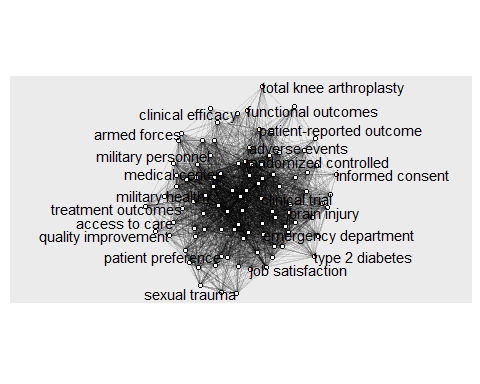
docs <- paste(naive\_results[, "title"], naive\_results[, "abstract"])  
  
docs[1]

## [1] "Patient Falls, Nurse Communication, and Nurse Hourly Rounding in Acute Care: Linking Patient Experience and Outcomes. Research has consistently found a link between hourly nurse rounding and patient outcomes, including reduced falls, reduced pressure ulcers, reduced call light usage, and improved patient experience; however, little research exists specific to patient falls and nurse rounding in acute care settings. This study adds to the body of knowledge by statistically quantifying and providing linkages between nurse rounding frequency and patient fall rates using data from 31 military treatment facilities comprehensively over a period from fiscal year (FY) 2017 through FY2019. Poisson regression results indicated that hourly nurse rounding was associated with a reduction of more than 21% in fall rates (incidence rate ratio = 0.79, P < .01) relative to infrequent rounding, and poorly rated nurse communication was associated with an 8.6-fold increase in patient fall rates relative to highly rated nurse communication (incidence rate ratio = 8.6, P < .01)."

#Creates a Document Term Matrix which has the document/title as the columns, and the terms as the row.  
dfm <- create\_dfm(elements=docs, features=terms)  
  
#Create a network analysis. THese terms must appear in at least 3 studies.   
g <- create\_network(dfm, min\_studies=10)  
  
#Create graphics of the terms  
ggraph(g, layout="stress") +  
 coord\_fixed() +  
 expand\_limits(x=c(-3, 3)) +  
 geom\_edge\_link(aes(alpha=weight)) +  
 geom\_node\_point(shape="circle filled", fill="white") +  
 geom\_node\_text(aes(label=name), hjust="outward", check\_overlap=TRUE) +  
 guides(edge\_alpha=FALSE)

## Warning: The `<scale>` argument of `guides()` cannot be `FALSE`. Use "none" instead as  
## of ggplot2 3.3.4.  
## This warning is displayed once every 8 hours.  
## Call `lifecycle::last\_lifecycle\_warnings()` to see where this warning was  
## generated.

## Warning: Using the `size` aesthetic in this geom was deprecated in ggplot2 3.4.0.  
## ℹ Please use `linewidth` in the `default\_aes` field and elsewhere instead.  
## This warning is displayed once every 8 hours.  
## Call `lifecycle::last\_lifecycle\_warnings()` to see where this warning was  
## generated.



Terms that appear near the center of the graph and that are linked to each other by darker lines are probably more important for our overall topic. Here these include for example cbt, phobia, and behavioral therapy.

Terms that appear at the periphery of the graph and linked to it only by faint lines are not closely related to any other terms. These are mostly tangential terms that are related to, but not part of, our main topic, for example functional magnetic resonance imaging and emotion regulation.

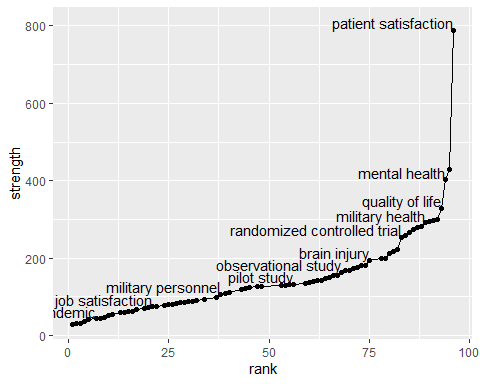
We want to make sure that we are keeping the strongest terms. We can do this via looking at term strength organized from min to max.

strengths <- strength(g)  
  
data.frame(term=names(strengths), strength=strengths, row.names=NULL) %>%  
 mutate(rank=rank(strength, ties.method="min")) %>%  
 arrange(strength) ->  
 term\_strengths  
  
term\_strengths

## term strength rank  
## 1 total knee arthroplasty 29 1  
## 2 minimally invasive 30 2  
## 3 informed consent 31 3  
## 4 clinical efficacy 37 4  
## 5 patient preference 42 5  
## 6 functional outcomes 42 5  
## 7 covid-19 pandemic 43 7  
## 8 armed forces 45 8  
## 9 controlled study 46 9  
## 10 treatment outcomes 51 10  
## 11 type 2 diabetes 54 11  
## 12 prospective randomized 54 11  
## 13 retrospective study 59 13  
## 14 quality improvement 60 14  
## 15 pain intensity 61 15  
## 16 physical therapy 62 16  
## 17 saudi arabia 68 17  
## 18 cancer patients 68 17  
## 19 surgical treatment 69 19  
## 20 prospective study 72 20  
## 21 job satisfaction 74 21  
## 22 public health 75 22  
## 23 military sexual trauma 75 22  
## 24 intensive care 79 24  
## 25 military veterans 80 25  
## 26 sexual trauma 81 26  
## 27 treatment satisfaction 82 27  
## 28 patient satisfaction survey 85 28  
## 29 military hospital 86 29  
## 30 quality of care 87 30  
## 31 military healthcare 89 31  
## 32 healthcare system 91 32  
## 33 military sexual 91 32  
## 34 clinical trials 92 34  
## 35 military treatment facility 92 34  
## 36 teaching hospital 92 34  
## 37 access to care 99 37  
## 38 military personnel 106 38  
## 39 cohort study 109 39  
## 40 patient-reported outcomes 111 40  
## 41 health outcomes 111 40  
## 42 veterans affairs 111 40  
## 43 cross-sectional study 118 43  
## 44 adverse events 122 44  
## 45 health-related quality of life 123 45  
## 46 patient safety 123 45  
## 47 military population 127 47  
## 48 patient-reported outcome 128 48  
## 49 post-traumatic stress disorder 128 48  
## 50 health administration 128 48  
## 51 treatment facility 128 48  
## 52 veterans health administration 128 48  
## 53 behavioral health 129 53  
## 54 patient outcomes 130 54  
## 55 pain management 131 55  
## 56 pilot study 132 56  
## 57 randomized clinical 132 56  
## 58 randomized clinical trial 132 56  
## 59 veterans health 135 59  
## 60 emergency department 136 60  
## 61 health services 140 61  
## 62 post-traumatic stress 142 62  
## 63 clinical practice 143 63  
## 64 united states 147 64  
## 65 systematic review 151 65  
## 66 patient experience 155 66  
## 67 clinical outcomes 156 67  
## 68 observational study 163 68  
## 69 health service 168 69  
## 70 military treatment facilities 169 70  
## 71 military service 174 71  
## 72 satisfaction survey 176 72  
## 73 posttraumatic stress disorder 181 73  
## 74 treatment facilities 182 74  
## 75 brain injury 195 75  
## 76 traumatic brain injury 195 75  
## 77 traumatic brain 195 75  
## 78 patients undergoing 198 78  
## 79 posttraumatic stress 199 79  
## 80 primary care 211 80  
## 81 military health system 217 81  
## 82 military treatment 222 82  
## 83 randomized controlled trial 254 83  
## 84 medical center 258 84  
## 85 randomized controlled 267 85  
## 86 clinical trial 275 86  
## 87 stress disorder 279 87  
## 88 health system 282 88  
## 89 military health 291 89  
## 90 service members 296 90  
## 91 controlled trial 298 91  
## 92 service member 300 92  
## 93 quality of life 328 93  
## 94 mental health 402 94  
## 95 health care 429 95  
## 96 patient satisfaction 789 96

Using these, we can create a cutoff figure.

cutoff\_fig <- ggplot(term\_strengths, aes(x=rank, y=strength, label=term)) +  
 geom\_line() +  
 geom\_point() +  
 geom\_text(data=filter(term\_strengths, rank>5), hjust="right", nudge\_y=20, check\_overlap=TRUE)  
  
  
  
cutoff\_fig

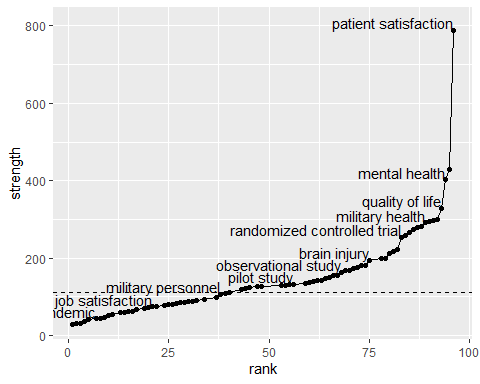


Cumulatively One simple way to decide on a cutoff is to choose to retain a certain proportion of the total strength of the network of search terms, for example 80%. If we supply the argument method=“cumulative” to the find\_cutoff() function, we get the cutoff strength value according to this method. The percent argument specifies what proportion of the total strength we would like to retain.

cutoff\_cum <- find\_cutoff(g, method="cumulative", percent=0.8)  
  
cutoff\_cum

## [1] 111

cutoff\_fig +  
 geom\_hline(yintercept=cutoff\_cum, linetype="dashed")



With this, we can prune our keyword search to the most relevent keywords.

get\_keywords(reduce\_graph(g, cutoff\_cum))

## [1] "adverse events" "brain injury"   
## [3] "clinical outcomes" "clinical trial"   
## [5] "emergency department" "health-related quality of life"  
## [7] "health care" "mental health"   
## [9] "military health" "observational study"   
## [11] "pain management" "patient-reported outcome"   
## [13] "patient-reported outcomes" "patient experience"   
## [15] "patient outcomes" "patient safety"   
## [17] "patient satisfaction" "post-traumatic stress disorder"  
## [19] "posttraumatic stress disorder" "primary care"   
## [21] "quality of life" "service member"   
## [23] "systematic review" "traumatic brain injury"   
## [25] "behavioral health" "clinical practice"   
## [27] "controlled trial" "cross-sectional study"   
## [29] "health administration" "health outcomes"   
## [31] "health service" "health services"   
## [33] "health system" "medical center"   
## [35] "military health system" "military population"   
## [37] "military service" "military treatment"   
## [39] "military treatment facilities" "patients undergoing"   
## [41] "pilot study" "post-traumatic stress"   
## [43] "posttraumatic stress" "randomized clinical"   
## [45] "randomized clinical trial" "randomized controlled"   
## [47] "randomized controlled trial" "satisfaction survey"   
## [49] "service members" "stress disorder"   
## [51] "traumatic brain" "treatment facilities"   
## [53] "treatment facility" "united states"   
## [55] "veterans affairs" "veterans health"   
## [57] "veterans health administration"

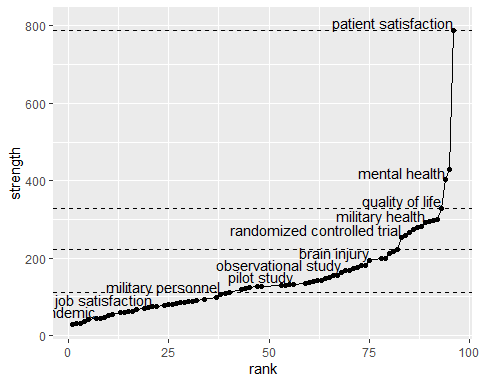
Changepoints

Looking at the figure above, another method of pruning away terms suggests itself. There are certain points along the ranking of terms where the strength of the next strongest term is much greater than that of the previous one (places where the ascending line ‘jumps up’). We could use these places as cutoffs, since the terms below them have much lower strength than those above. There may of course be more than one place where term strength jumps up like this, so we will have multiple candidates for cutoffs. The same find\_cutoff() function with the argument method=“changepoint” will find these cutoffs. The knot\_num argument specifies how many ‘knots’ we wish to slice the keywords into.

cutoff\_change <- find\_cutoff(g, method="changepoint", knot\_num=3)  
  
cutoff\_change

## [1] 111 222 328 789

cutoff\_fig +  
 geom\_hline(yintercept=cutoff\_change, linetype="dashed")



g\_redux <- reduce\_graph(g, cutoff\_change[2])  
selected\_terms <- get\_keywords(g\_redux)  
  
selected\_terms

## [1] "clinical trial" "health care"   
## [3] "mental health" "military health"   
## [5] "patient satisfaction" "quality of life"   
## [7] "service member" "controlled trial"   
## [9] "health system" "medical center"   
## [11] "military treatment" "randomized controlled"   
## [13] "randomized controlled trial" "service members"   
## [15] "stress disorder"

Grouping Now that we have got a revised list of search terms from the results of our naive search, we want to turn them into a new search query that we can use to get more articles relevant to the same topic. For this new, hopefully more rigorous, search we will need a combination of OR and AND operators. The OR operator should combine search terms that are all about the same subtopic, so that we get articles that contain any one of them. The AND operator should combine these groups of search terms so that we get only articles that mention at least one term from each of the subtopics that we are interested in.

grouped\_terms <-list(  
 military=selected\_terms[c(4, 7, 10, 12)],  
 health=selected\_terms[c(2, 3, 4, 9, 10, 15)],  
 sdesign=selected\_terms[c(1, 8, 10, 11)],  
 healthmetrics=selected\_terms[c(2, 5, 6)]  
)  
  
grouped\_terms

## $military  
## [1] "military health" "service member" "medical center"   
## [4] "randomized controlled"  
##   
## $health  
## [1] "health care" "mental health" "military health" "health system"   
## [5] "medical center" "stress disorder"  
##   
## $sdesign  
## [1] "clinical trial" "controlled trial" "medical center"   
## [4] "military treatment"  
##   
## $healthmetrics  
## [1] "health care" "patient satisfaction" "quality of life"

Writing a new search

#write\_search(  
 # grouped\_terms,  
 #languages="English",  
 #exactphrase=TRUE,  
 #stemming=FALSE,  
 #closure="left",  
 #writesearch=TRUE  
#)  
  
#cat(read\_file("search-inEnglish.txt"))

# 

# ```{r}

# #new\_results <- import\_results(file="C:/Users/DominikaOliver/Downloads/pubmed-militaryhe-set.nbib")

# #nrow(new\_results)

# ```

# Comparing results: This checks how many new results we get by checking how many of the results are not in the old list.

# ```{r}

# #naive\_results %>%

# # mutate(in\_new\_results=title %in% new\_results[, "title"]) ->

# # naive\_results

# #naive\_results %>%

# # filter(!in\_new\_results) %>%

# # select(title, keywords)

# ```

# Session Information

sessionInfo()

## R version 4.3.1 (2023-06-16 ucrt)  
## Platform: x86\_64-w64-mingw32/x64 (64-bit)  
## Running under: Windows 11 x64 (build 22621)  
##   
## Matrix products: default  
##   
##   
## locale:  
## [1] LC\_COLLATE=English\_United States.utf8   
## [2] LC\_CTYPE=English\_United States.utf8   
## [3] LC\_MONETARY=English\_United States.utf8  
## [4] LC\_NUMERIC=C   
## [5] LC\_TIME=English\_United States.utf8   
##   
## time zone: America/New\_York  
## tzcode source: internal  
##   
## attached base packages:  
## [1] stats graphics grDevices utils datasets methods base   
##   
## other attached packages:  
## [1] litsearchr\_1.0.0 readr\_2.1.4 igraph\_1.6.0 ggraph\_2.1.0   
## [5] ggplot2\_3.4.4 dplyr\_1.1.2 pubmedR\_0.0.3   
##   
## loaded via a namespace (and not attached):  
## [1] stringdist\_0.9.12 gtable\_0.3.4 xfun\_0.40 ggrepel\_0.9.4   
## [5] lattice\_0.21-8 tzdb\_0.4.0 vctrs\_0.6.3 tools\_4.3.1   
## [9] generics\_0.1.3 curl\_5.1.0 parallel\_4.3.1 tibble\_3.2.1   
## [13] fansi\_1.0.4 highr\_0.10 pkgconfig\_2.0.3 rentrez\_1.2.3   
## [17] lifecycle\_1.0.4 compiler\_4.3.1 farver\_2.1.1 munsell\_0.5.0   
## [21] ggforce\_0.4.1 graphlayouts\_1.0.2 htmltools\_0.5.6 yaml\_2.3.7   
## [25] pillar\_1.9.0 crayon\_1.5.2 tidyr\_1.3.0 MASS\_7.3-60   
## [29] viridis\_0.6.4 synthesisr\_0.3.0 stopwords\_2.3 tidyselect\_1.2.0   
## [33] digest\_0.6.33 purrr\_1.0.2 labeling\_0.4.3 changepoint\_2.2.4   
## [37] polyclip\_1.10-6 fastmap\_1.1.1 grid\_4.3.1 colorspace\_2.1-0   
## [41] cli\_3.6.1 magrittr\_2.0.3 tidygraph\_1.2.3 XML\_3.99-0.16   
## [45] utf8\_1.2.3 withr\_2.5.2 scales\_1.3.0 rmarkdown\_2.25   
## [49] httr\_1.4.7 gridExtra\_2.3 ngram\_3.2.2 zoo\_1.8-12   
## [53] hms\_1.1.3 evaluate\_0.23 knitr\_1.45 viridisLite\_0.4.2   
## [57] rlang\_1.1.1 Rcpp\_1.0.11 glue\_1.6.2 tweenr\_2.0.2   
## [61] rstudioapi\_0.15.0 jsonlite\_1.8.7 R6\_2.5.1