# Awake prone positioning for non-intubated patients with COVID-19-related acute hypoxaemic respiratory failure: a systematic review and meta-analysis

## Abstract

**Background:**Awake prone positioning has been broadly utilised for non-intubated patients with COVID-19-related acute hypoxaemic respiratory failure, but the results from published randomised controlled trials (RCTs) in the past year are contradictory. We aimed to systematically synthesise the outcomes associated with awake prone positioning, and evaluate these outcomes in relevant subpopulations.

**Methods:**In this systematic review and meta-analysis, two independent groups of researchers searched MEDLINE, Embase, PubMed, Web of Science, Scopus, MedRxiv, BioRxiv, and ClinicalTrials.gov for RCTs and observational studies (with a control group) of awake prone positioning in patients with COVID-19-related acute hypoxaemic respiratory failure published in English from Jan 1, 2020, to Nov 8, 2021. We excluded trials that included patients intubated before or at enrolment, paediatric patients (ie, younger than 18 years), or trials that did not include the supine position in the control group. The same two independent groups screened studies, extracted the summary data from published reports, and assessed the risk of bias. We used a random-effects meta-analysis to pool individual studies. We used the Grading of Recommendations Assessment, Development, and Evaluation approach to assess the certainty and quality of the evidence. The primary outcome was the reported cumulative intubation risk across RCTs, and effect estimates were calculated as risk ratios (RR;95% CI). The analysis was primarily conducted on RCTs, and observational studies were used for sensitivity analyses. No serious adverse events associated with awake prone positioning were reported. The study protocol was prospectively registered with PROSPERO, CRD42021271285.

**Findings:**A total of 1243 studies were identified, we assessed 138 full-text articles and received the aggregated results of three unpublished RCTs; therefore, after exclusions, 29 studies were included in the study. Ten were RCTs (1985 patients) and 19 were observational studies (2669 patients). In ten RCTs, awake prone positioning compared with the supine position significantly reduced the need for intubation in the overall population (RR 0·84 [95% CI 0·72-0·97]). A reduced need for intubation was shown among patients who received advanced respiratory support (ie, high-flow nasal cannula or non-invasive ventilation) at enrolment (RR 0·83 [0·71-0·97]) and in intensive care unit (ICU) settings (RR 0·83 [0·71-0·97]) but not in patients receiving conventional oxygen therapy (RR 0·87 [0·45-1·69]) or in non-ICU settings (RR 0·88 [0·44-1·76]). No obvious risk of bias and publication bias was found among the included RCTs for the primary outcome.

**Interpretation:**In patients with COVID-19-related acute hypoxaemic respiratory failure, awake prone positioning reduced the need for intubation, particularly among those requiring advanced respiratory support and those in ICU settings. Awake prone positioning should be used in patients who have acute hypoxaemic respiratory failure due to COVID-19 and require advanced respiratory support or are treated in the ICU.

# Depression, anxiety, and academic performance in COVID-19: a cross-sectional study

## Abstract

Depression and anxiety are common after months of social isolation, and they can have a negative impact on anyone's quality of life if they are not treated promptly and appropriately. The aim of this study was to determine if the change to online modality courses and the presence of depression or anxiety symptoms during the COVID-19 pandemic was associated with a difference in the college student's academic achievement. This study was a cross-sectional survey in which we used the Patient Health Questionnaire-9 (PHQ-9) and the General Anxiety Disorder-7 (GAD-7). Also, we examined the students' perceptions of their academic performance using the Academic Self-Concept Scale (ASCS). A total of 610 students responded to the survey. The average score on the Academic Self-Concept Scale was 2.76 ± 0.35, the students presented a risk of 61.5% for possible depressive disorder and 52.1% for possible generalized anxiety disorder. The intensity of depression and anxiety symptoms had a significant effect on Academic Self-Concept Scale scores (p < 0.001 and p < 0.05, respectively). The findings indicate that the COVID-19 pandemic has had a direct effect on students' mental health and academic performance.

**Keywords:**Anxiety; COVID-19; Depression; Educational measurements; Educational needs assessment; Mental health.

# Analysis of TNFSF13B polymorphisms and BAFF expression in rheumatoid arthritis and primary Sjögren's syndrome patients

## Abstract

**Background:**The increased expression of B cell-activating factor (BAFF) has been linked to autoantibody production in autoimmune diseases (ADs). The aim of this study was to investigate the association among TNFSF13B gene (OMIM: 603969) single nucleotide polymorphisms (SNPs), TNFSF13B mRNA, and soluble BAFF (sBAFF) expression in patients with rheumatoid arthritis (RA) and primary Sjögren's syndrome (pSS). The diagnostic value of sBAFF also was evaluated by the area under the curve (AUC) of receiver operating characteristic or receptor (ROC) curves.

**Methods:**Genotypes of the TNFSF13B rs9514827 (-2841 T > C), rs1041569 (-2701 A > T) and rs9514828 (-871 C > T) SNPs were determined by PCR-RFLP assay. TNFSF13B mRNA and sBAFF expression were performed by RT-qPCR and ELISA, respectively. The study included 320 RA patients, 101 pSS patients, and 309 healthy subjects (HS).

**Results:**The rs9514828 T allele and the TAT haplotype were associated with an increased risk to develop RA. In both ADs, the TNFSF13B mRNA levels were increased in comparison with HS. The rs9514828 (-871 C > T) polymorphism was associated with increased gene expression in RA patients. Also, sBAFF levels were higher in both ADs, however pSS patients showed the highest sBAFF levels. sBAFF showed higher diagnostic performance for pSS with an AUC of 0.968, with a similar accuracy of anti-SSA/Ro antibody diagnosis (AUC = 0.974).

**Conclusions:**Our findings demonstrate that the TNFSF13B rs9514828 (-871 C > T) polymorphism is a risk factor for RA in the western Mexican population. sBAFF levels may be a potential diagnosis biomarker in pSS.

**Keywords:**TNFSF13B polymorphisms; primary Sjogren's syndrome; rheumatoid arthritis; sBAFF levels.

# Predictive factors for nephrectomy in renal trauma; assessment of a 6-point score

## Abstract

**Purpose:**To evaluate predictive and associated risk factors for nephrectomy in renal trauma and assess a 6-point score for surgical decision-making.

**Patients and methods:**This multicenter, retrospective, and observational study assessed 247 subjects with blunt or penetrating kidney trauma. Kidney injuries were classified according to the American Association for the Surgery of Trauma (AAST) Injury Scoring Scale. Renal trauma was classified as "low-grade" (Grades I-III), Grade IV, and Grade V. Subjects were compared according to conservative treatment (CTrt.) or nephrectomy. Predictive factors were evaluated with a multiple regression model. A 6-point score was evaluated with a ROC analysis.

**Results:**Patients requiring nephrectomy had a lower mean arterial pressure MAP compared to CTrt, 64.71 mmHg (SD ± 10.26) and 73.86 (SD ± 12.42), respectively (p = < 0.001). A response to IV solutions was observed in 90.2% of patients undergoing CTrt. (p = < 0.001, OR = 0.211, 95%CI = 0.101-0.442). Blood lactate ≥ 4 mmol/L was associated with nephrectomy (p = < 0.001). A hematoma ≥ 25 mm was observed in 41.5% of patients undergoing nephrectomy compared to 20.1% of CTrt. (p = 0.004, OR = 9.29, 95% CI = 1.37-5.58). A logistic regression analysis (p = < 0.001) showed that blood lactate ≥ 4 mmol/L (p = 0.043), an inadequate response to IV solutions (p = 0.041) and renal trauma grade IV-V (p = < 0.001), predicted nephrectomy. A 6-point score with a cut-off value ≥ 3 points showed 83% sensitivity and 87% specificity for nephrectomy with an AUC of 89.9% (p = < 0.001).

**Conclusions:**An inadequate response to IV solutions, a lactate level ≥ 4 mmol/L, and grade IV-V renal trauma predict nephrectomy. A score ≥ 3 points showed a good performance in this population.

**Keywords:**Hematuria; Kidney; Nephrectomy; Penetrating wounds; Wounds and injuries.

# Rethinking the efficacy of awake prone positioning in COVID-19-related acute hypoxaemic respiratory failure - Authors' reply

No abstract available

### Conflict of interest statement

Competing interests remain the same as in the original Article.

# *Escherichia*/ *Shigella*, SCFAs, and Metabolic Pathways-The Triad That Orchestrates Intestinal Dysbiosis in Patients with Decompensated Alcoholic Cirrhosis from Western Mexico

## Abstract

Gut microbiota undergoes profound alterations in alcohol cirrhosis. Microbiota-derived products, e.g., short chain fatty acids (SCFA), regulate the homeostasis of the gut-liver axis. The objective was to evaluate the composition and functions of the intestinal microbiota in patients with alcohol-decompensated cirrhosis. Fecal samples of 18 patients and 18 healthy controls (HC) were obtained. Microbial composition was characterized by 16S rRNA amplicon sequencing, SCFA quantification was performed by gas chromatography (GC), and metagenomic predictive profiles were analyzed by PICRUSt2. Gut microbiota in the cirrhosis group revealed a significant increase in the pathogenic/pathobionts genera *Escherichia*/*Shigella* and *Prevotella*, a decrease in beneficial bacteria, such as *Blautia*, *Faecalibacterium*, and a decreased α-diversity (*p* &lt; 0.001) compared to HC. Fecal SCFA concentrations were significantly reduced in the cirrhosis group (*p* &lt; 0.001). PICRUSt2 analysis indicated a decrease in acetyl-CoA fermentation to butyrate, as well as an increase in pathways related to antibiotics resistance, and aromatic amino acid biosynthesis. These metabolic pathways have been poorly described in the progression of alcohol-related decompensated cirrhosis. The gut microbiota of these patients possesses a pathogenic/inflammatory environment; therefore, future strategies to balance intestinal dysbiosis should be implemented. These findings are described for the first time in the population of western Mexico.

**Keywords:**Escherichia; SCFA; alcohol; butyrate; liver cirrhosis; microbiome.

# Lung ultrasound response to awake prone positioning predicts the need for intubation in patients with COVID-19 induced acute hypoxemic respiratory failure: an observational study

## Abstract

**Background:**Awake prone positioning (APP) reduces the intubation rate in COVID-19 patients treated by high-flow nasal cannula (HFNC). However, the lung aeration response to APP has not been addressed. We aimed to explore the lung aeration response to APP by lung ultrasound (LUS).

**Methods:**This two-center, prospective, observational study enrolled patients with COVID-19-induced acute hypoxemic respiratory failure treated by HFNC and APP. LUS score was recorded 5-10 min before, 1 h after APP, and 5-10 min after supine in the first APP session within the first three days. The primary outcome was LUS score changes in the first three days. Secondary outcomes included changes in SpO2/FiO2 ratio, respiratory rate and ROX index (SpO2/FiO2/respiratory rate) related to APP, and the rate of treatment success (patients who avoided intubation).

**Results:**Seventy-one patients were enrolled. LUS score decreased from 20 (interquartile range [IQR] 19-24) to 19 (18-21) (p < 0.001) after the first APP session, and to 19 (18-21) (p < 0.001) after three days. Compared to patients with treatment failure (n = 20, 28%), LUS score reduction after the first three days in patients with treatment success (n = 51) was greater (- 2.6 [95% confidence intervals - 3.1 to - 2.0] vs 0 [- 1.2 to 1.2], p = 0.001). A decrease in dorsal LUS score > 1 after the first APP session was associated with decreased risk for intubation (Relative risk 0.25 [0.09-0.69]). APP daily duration was correlated with LUS score reduction in patients with treatment success, especially in dorsal lung zones (r = - 0.76; p < 0.001).

**Conclusions:**In patients with acute hypoxemic respiratory failure due to COVID-19 and treated by HFNC, APP reduced LUS score. The reduction in dorsal LUS scores after APP was associated with treatment success. The longer duration on APP was correlated with greater lung aeration. Trial registration This study was prospectively registered on clinicaltrials.gov on April 22, 2021. Identification number [NCT04855162](http://clinicaltrials.gov/show/NCT04855162) .

**Keywords:**Awake prone positioning; COVID-19; High-flow nasal cannula; Intubation; Lung ultrasound.