

**Evidence Analysis Library: Chronic Obstructive Pulmonary Disease  
Medical Nutrition Therapy**

**What is the effectiveness of medical nutrition therapy (MNT) on outcomes in adults with COPD?**

**List of Excluded Articles (N=149)**

Article	Reason for Exclusion <sup>1</sup>
Ahmadi A, Haghghat N, Hakimrabet M, Tolide-ie H. Nutritional evaluation in chronic obstructive pulmonary disease patients. <i>Pak J Biol Sci.</i> 2012; 15(10): 501-5. PMID: 24187906.	Not relevant to research question; focused on intake of macro- and micronutrients in different stages of COPD. No MNT intervention by an RDN.
Aimonino Ricauda N, Tibaldi V, Leff B, Scarafioti C, et al. Substitutive "hospital at home" versus inpatient care for elderly patients with exacerbations of chronic obstructive pulmonary disease: a prospective randomized, controlled trial. <i>J Am Geriatr Soc.</i> 2008;56(3):493-500. PMID: 18179503 doi: 10.1111/j.1532-5415.2007.01562.x.	Not relevant to research question; evaluated hospital readmission rates and mortality in elderly patients with AECOPD; No MNT intervention by an RDN.
Amin S, Abrazado M, Quinn M, Storer TW, et al. A controlled study of community-based exercise training in patients with moderate COPD. <i>BMC Pulmonary Medicine.</i> 2014;14(1):125-125 1p. Accession Number: 103838925. Entry Date: 20150227. Revision Date: 20150710. doi: 10.1186 1471-2466-14-125	"Certified nutritionist" provided nutrition counseling, but further description of credentials was not provided; unable to determine if provider of intervention was MNT by an RDN.
Andersson I, Gronberg A, Slinde F, Bosaeus I, Larsson S. Vitamin and mineral status in elderly patients with chronic obstructive pulmonary disease. <i>Clin Respir J.</i> 2007;1(1):23-9. PMID: 20298274 doi: 10.1111/j.1752-699X.2007.00003.x.	Not relevant to research question; studied dietary intake, concentration of trace elements and vitamins in patients with COPD. Dietary intake of nutrients was evaluated by dietitian but effectiveness of MNT intervention was not evaluated.
Baldi S, Aquilani R, Pinna GD, Poggi P, et al. De Martini A, Bruschi C. Fat-free mass change after nutritional rehabilitation in weight losing COPD: role of insulin, C-reactive protein and tissue hypoxia. <i>Int J Chron Obstruct Pulmon Dis.</i> 2010; 5:29-39. PMID: 20368909.	Not relevant to research question; tested amino acid supplement of FFM. No MNT intervention by an RDN.
Benedict M. Pulmonary rehab: opportunity is knocking for RDs. <i>Health Care Food Nutr Focus.</i> 2006 Sep; 23(9): 6-7. PMID: 16954797	Not a research study.
Bertolini G1, Confalonieri M, Rossi C, Rossi G, et al. Costs of the COPD. Differences between intensive care unit and respiratory intermediate care unit. <i>Respir Med.</i> 2005; 99(7): 894-900. PMID: 15939252 doi: 10.1016/j.rmed.2004.11.014.	Critical care setting / ICU (on mechanical ventilation).
Bottle L, Engel B, Hart K, Klopper T. The efficacy of dietetic intervention in patients with chronic obstructive pulmonary disease. <i>Journal Of Human Nutrition &amp; Dietetics</i> [serial online]. August 2008; 21(4): 381-382.	Not a research study (selected abstracts from the British Dietetic Association Conference 2008)
Borghi-Silva A1, Baldissera V, Sampaio LM, Pires-DiLorenzo VA, et al. L-carnitine as an ergogenic aid for patients with chronic obstructive pulmonary disease submitted to whole-body and respiratory muscle training programs. <i>Braz J Med Biol Res.</i> 2006;39(4):465-74. PMID: 16612469 doi: /S0100-879x 2006000400006.	Less than 10 subjects per study group.
Bradley A1, Marshall A, Stonehewer L, Reaper L, Parker K, et al. Pulmonary rehabilitation programme for patients undergoing curative lung cancer surgery. <i>Eur J Cardiothorac Surg.</i> 2013; 44(4): e266-71. PMID: 23959742 doi: 10.1093/ejcts/ezt381.	Not relevant to research question; developed a rehab program for operable lung cancer patients (36% of intervention group had COPD). Dietary advice / assessment was provided by nurse. Dietitian was involved upon referral (9% of intervention patients), for nutrition supplements and assessment. Results of this component were not reported separately.
Broekhuizen R, Creutzberg EC, Weling-Scheepers CA, Wouters EF, Schols AM. Optimizing oral nutritional drink supplementation in patients with chronic obstructive pulmonary disease. <i>Br J Nutr.</i> 2005;93(6):965-71. PMID: 16022768.	Not relevant to research question; measured weight outcomes of two different supplement amounts offered with analysis of database; no MNT intervention by an RDN.
Brooks D, Sottana R, Bell B, Hanna M, Laframboise L, Selvanayagarajah S, Goldstein R. Characterization of pulmonary rehabilitation programs in Canada in 2005. <i>Can Respir J.</i> 2007 Mar; 14(2):87-92. PMID: 17372635	Not relevant to research question; conducted national survey to characterize adult pulmonary rehabilitation in Canada. No MNT intervention by an RDN.
Cai B, Zhu Y, Ma Yi, Xu Z, Zao Yi, Wang J, Lin Y, Comer GM. Effect of supplementing a high-fat, low-carbohydrate enteral formula in COPD patients. <i>Nutrition.</i> 2003;19(3):229-32. PMID: 12620524.	Not relevant to research question; participants in control were given standard high CHO diet, and experimental group was given low CHO, high fat supplement. No MNT

Article	Reason for Exclusion <sup>1</sup>
	intervention by and RDN. Secondary criteria: Published prior to 2005.
Cano NJ, Pichard C, Roth H, et al. C-reactive protein and body mass index predict outcome in end-stage respiratory failure. <i>Chest</i> . 2004;126(2):540-6. PMID: 15302742 doi: 10.1378/chest.126.2.540.	Not relevant to research question; determined the predictive factors of morbidity and mortality in patients with end-stage respiratory disease (42.8% had COPD). No MNT intervention by an RDN. Secondary criteria: Published prior to 2005.
Carone M, Patessio A, Ambrosino N, et al. Efficacy of pulmonary rehabilitation in chronic respiratory failure (CRF) due to chronic obstructive pulmonary disease (COPD): The Maugeri Study. <i>Respir Med</i> . 2007; 101(12):2447-53. PMID: 17728121 doi: 10.1016/j.rmed.2007.07.016.	Evaluated the overall pulmonary rehab program, which included nutrition as a component. Provider of nutrition counseling was not specified.
Chailleux E, Laaban JP and Veale D. Prognostic value of nutritional depletion in patients with COPD treated by long-term oxygen therapy: data from the ANTADIR observatory. <i>Chest</i> . 2003;123(5):1460-6. PMID: 12740261.	Not relevant to research question; analyzed the prognostic value of nutritional depletion in patients with COPD; no MNT intervention by an RDN. Secondary criteria: Published prior to 2005.
Chambaneau A, Filaire M, Jubert L, Bremond M, & Filaire E. (2016). Nutritional Intake, Physical Activity and Quality of Life in COPD Patients. <i>Int J Sports Med</i> , 37(9), 730-737. PMID: 27286177	Not relevant to research question; documented physical activity, QoL, depression status and nutritional data of COPD patients. No MNT intervention by an RDN.
Chang AB, Grimwood K, Maguire G, King PT, Morris PS, Torzillo PJ. Management of bronchiectasis and chronic suppurative lung disease in indigenous children and adults from rural and remote Australian communities. <i>Med J Aust</i> . 2008;189(7):386-93. PMID: 18837683.	Not a research study.
Chavannes NH. Integrated chronic obstructive pulmonary disease management in primary care. <i>Dis Manage Health Outcomes</i> 2008; 16 (5): 315-318.	Not relevant to research question; no data reported or outcomes of interest. No MNT intervention by an RDN.
Chucru, S.G. and Roche, N. (2015). Update on COPD exacerbation. <i>Minerva Pneumologica</i> , 54(4), 169-181.	Review article.
Cochrane WJ, Afolabi OA. Investigation into the nutritional status, dietary intake and smoking habits of patients with chronic obstructive pulmonary disease. <i>J Hum Nutr Diet</i> . 2004;17(1): 3-11; quiz 13-5. PMID: 14718026.	Not relevant to research question; investigated factors affecting body weight and dietary intake in COPD patients; no MNT intervention by an RDN. Secondary criteria: published prior to 2005.
Collins, P, Stonestreet, J., Masel, P., Yang, I, Collins, P. Complexity of nutrition screening in patients admitted with an exacerbation of chronic obstructive pulmonary disease (COPD). <i>Revista Espanola de Nutricion Humana y Dietetica</i> , (2016) 20, 371.	Not relevant to research question; evaluated validity and reliability of nutrition screening. No MNT intervention by an RDN.
Constantin D, Menon MK, Houchen-Wolloff L, et al. Skeletal muscle molecular responses to resistance training and dietary supplementation in COPD. <i>Thorax</i> .2013;68(7):625-33. PMID: 23535211 doi: 10.1136/thoraxjnl-2012-202764.	Not relevant to research question; evaluated the use of protein and CHO supplements after resistance exercise. No MNT intervention by an RDN.
Creutzberg EC, Schols AM, Weling-Scheepers CA, Buurman WA, Wouters EF. Characterization of nonresponse to high caloric oral nutritional therapy in depleted patients with chronic obstructive pulmonary disease. <i>Am J Respir Crit Care Med</i> . 2000;161(3 Pt 1):745-52. PMID: 10712317 doi: 10.1164/ajrccm.161.3.9808075.	Less than 10 subjects per study group. Secondary criteria: published prior to 2005.
Creutzberg EC, Wouters EF, Mostert R, Weling-Scheepers CA, Schols AM. Efficacy of nutritional supplementation therapy in depleted patients with chronic obstructive pulmonary disease. <i>Nutrition</i> .2003;19(2):120-7. PMID: 12591542.	Not relevant to research question; measured efficacy of nutritional supplements. No MNT intervention by an RDN. Secondary criteria: Published prior to 2005.
Daga MK, Khan NA, Malhotra V, Kumar S, Mawari G, Hira HS. Study of body composition, lung function, and quality of life following use of anabolic steroids in patients with chronic obstructive pulmonary disease. <i>Nutr Clin Pract</i> . 2014; 29(2): 238-45. PMID: 24552826 doi: 10.1177/0884533614522832.	Not relevant to research question; compared anabolic steroid in terms of a daily high-protein, high-calorie diet alone or one combined with anabolic steroids on outcomes; No MNT intervention by an RDN.
de Batlle J, Mendez M, Romieu I, et al. Cured meat consumption increases risk of readmission in COPD patients. <i>Eur Respir J</i> . 2012;40(3): 555-60. PMID: 22408205 doi: 10.1183/09031936.00116911.	Not relevant to research question; focused on cured meat intake and hospital admissions; No MNT intervention by an RDN.
Deprez R, Kinner A, Millard P, Baggott L, Mellett J, Loo JL. Improving quality of care for patients with chronic obstructive pulmonary disease. <i>Popul Health Manag</i> . 2009 Aug;12(4):209-15. doi: 10.1089/pop.2008.0043. PMID: 19663624	Not relevant to research question; Evaluated COPD project; no MNT intervention by an RDN.
Dheda K, Crawford A, Hagan G, Roberts CM. Implementation of British Thoracic Society guidelines for acute exacerbation of chronic obstructive pulmonary disease: impact on quality of life. <i>Postgrad Med J</i> . 2004 Mar;80(941):169-71. PMID: 15016940	Not relevant to research question; tested British Thoracic guidelines for treatment of COPD. Nutrition advice was given by respiratory nurse or chest physician; no dietitian mentioned on the team. Secondary criteria: Published prior to 2005.

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Dickinson, J. (2009). An exploratory study of patient interventions and nutritional advice for patients with chronic obstructive pulmonary disease, living in the community. <i>Int J Dis Hum Deve</i> , 8(1), 43-50. doi: <a href="https://doi.org/10.1515/IJDHD.2009.8.1.43">https://doi.org/10.1515/IJDHD.2009.8.1.43</a>	Less than 10 subjects per study group.
Finnerty JP, Keeping I, Bullough I and Jones J. The effectiveness of outpatient pulmonary rehabilitation in chronic lung disease: a randomized controlled trial. <i>Chest</i> . 2001; 119(6):1705-10. PMID: 11399694.	Not relevant to research question; examined effect of pulmonary rehab program, including assessment of eating habits, but description of MNT intervention (what dietitian did) was not described adequately. Secondary criteria: Published prior to 2005.
Fischer MJ, Scharloo M, Abbink JJ, et al. Drop-out and attendance in pulmonary rehabilitation: the role of clinical and psychosocial variables. <i>Respir Med</i> . 2009;103(10):1564-71. PMID: 19481919 doi: 10.1016/j.rmed.2008.11.020.	Not relevant to research question; association study; looked for predictors of pulmonary rehab program attendance. No MNT intervention by an RDN.
Florian J, Rubin A, Mattiello R, Fontoura FF, Camargo Jde J, Teixeira PJ. Impact of pulmonary rehabilitation on quality of life and functional capacity in patients on waiting lists for lung transplantation. <i>J Bras Pneumol</i> . 2013 May-Jun; 39(3): 349-56. doi: 10.1590/S1806-37132013000300012. PMID: 23857680.	Not all patients had COPD; data not reported separately for COPD patients.
Forli L, Bjortuft O, Boe J. Vitamin D status in relation to nutritional depletion and muscle function in patients with advanced pulmonary disease. <i>Exp Lung Res</i> . 2009;35(6):524-38. PMID: 19842836.	Not relevant to research question; study examined vitamin D status as a predictor for muscle function in COPD patients. No MNT intervention by an RDN.
Forli L, Moum T, Bjortuft O, Vatn M and Boe J. The influence of underweight and dietary support on well-being in lung transplant candidates. <i>Respir Med</i> . 2006; 100(7): 1239-46. PMID: 16311026 doi: 10.1016/j.rmed.2005.10.016.	Not all patients had COPD and data were not reported separately for COPD patients; investigated associations between underweight, diet support and well-being, but no MNT intervention by an RDN.
Forli L, Boe J. The energy intake that is needed for weight gain in COPD candidates for lung transplantation. <i>COPD</i> 2005; 2:405-10.	Researchers combined first two study groups (MNT group and usual dietetic education group), then divided them according to weight gain post-intervention. Thus, MNT and usual care groups were not compared with each other or to controls.
Forli L, Pedersen JI, Bjortuft O, Blomhoff R, Kofstad J and Boe J. Vitamins A and E in serum in relation to weight and lung function in patients with advanced pulmonary disease. <i>Int J Vitam Nutr Res</i> . 2002; 72(6): 360-8. PMID: 12596500 doi: 10.1024/0300-9831.72.6.360.	COPD patient outcome data were reported separately and "trained dietitian" provided food intake assessment and counseling. Effectiveness of MNT counseling was not evaluated. Secondary criteria: published prior to 2005.
Forli L, Pedersen JI, Bjortuft O, Vatn M, Boe J. Dietary support to underweight patients with end-stage pulmonary disease assessed for lung transplantation. <i>Respiration</i> . 2001; 68(1): 51-7. PMID: 11223731 doi: 50463.	Not all patients had COPD and data not reported separately for COPD patients; Secondary criteria: Published prior to 2005.
Fuld JP, Kilduff LP, Neder JA, et al. Creatine supplementation during pulmonary rehabilitation in chronic obstructive pulmonary disease. <i>Thorax</i> . 2005;60(7):531-7. PMID: 15994258 DOI: 10.1136/thx.2004.030452.	Not relevant to research question; Evaluated how creatine nutritional supplementation influences muscle mass and exercise performance in COPD patients; No MNT intervention by an RDN.
Gale NS, Duckers JM, Proud D, Lines T, Enright S, Cockcroft JR, Shale DJ, Bolton CE. The Effect Of Pulmonary Rehabilitation on Arterial Stiffness in Patients with Chronic Obstructive Pulmonary Disease (COPD). <i>Artery Research</i> 2009(4) 173-174. 10.1016/j.artres.2009.10.056.	Not a research study (abstract).
Gariballa S, Forster S. Associations between underlying disease and nutritional status following acute illness in older people. <i>Clin Nutr</i> 2007;26(4):466-73. PMID: 17383777 doi: 10.1016/j.clnu.2007.01.012.	Not relevant to research question; measured the association between underlying disease and nutritional status in acutely ill older patients. No MNT intervention by an RDN.
Gariballa S, Forster S, Powers H. Riboflavin status in acutely ill patients and response to dietary supplements. <i>JPEN J Parenter Enteral Nutr</i> 2009; 33(6):656-61. PMID: 19644132 doi: 10.1177/0148607109336602.	Not relevant to research question; determined response to riboflavin during acute illness in older patients. COPD results reported separately. No MNT intervention by an RDN.
Garvey C, Fromer L, Saver DF, Yawn BP. Pulmonary rehabilitation: an underutilized resource in primary COPD care. <i>Phys Sportsmed</i> 2010 Dec;38(4):54-60. doi: 10.3810/psm.2010.12.1825. Review. PMID: 21150142	Review article.
Godoy I, Campana AO, Geraldo RR, Padovani CR, Paiva SA. Cytokines and dietary energy restriction in stable chronic obstructive pulmonary disease patients. <i>Eur Respir J</i> 2003; 22(6): 920-5. PMID: 14680079.	Not relevant to research question; investigated the effect of energy restriction on the activation of inflammatory systems in COPD patients. No MNT intervention by an RDN. Secondary criteria: Published prior to 2005.
Gonzalez KW, Ghneim MH, Kang F, Jupiter DC, Davis ML, Regner JL. A pilot single-institution predictive model to guide rib fracture management in elderly patients. <i>J Trauma Acute Care Surg</i> 2015; 78(5): 970-5. PMID: 25909417 doi: 10.1097/ta.0000000000000619.	Not all patients had COPD and data were not reported separately for COPD patients. No MNT intervention by an RDN.

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Gopal P, Rutten EP, Dentener MA, Wouters EF, Reynaert NL. Decreased plasma sRAGE levels in COPD: influence of oxygen therapy. <i>Eur J Clin Invest</i> 2012;42(8): 807-14. PMID: 22288943 doi: 10.1111/j.1365-2362.2012.02646.x.	Not relevant to research question; evaluated plasma components and determined their variation in COPD. No MNT intervention by an RDN.
Goris AH, Vermeeren MA, Wouters EF, Schols AM, Westerterp KR. Energy balance in depleted ambulatory patients with chronic obstructive pulmonary disease: the effect of physical activity and oral nutritional supplementation. <i>Br J Nutr.</i> 2003; 89(5):725-31. PMID: 12720592 doi: 10.1079/bjn2003838.	Not relevant to research question; studied energy balance of depleted COPD patients. Dietitian provided dietary advice and instruction on food records only; No MNT intervention by an RDN. Secondary criteria: Published prior to 2005.
Griffiths TL, Burr ML, Campbell IA, et al. Results at 1 year of outpatient multidisciplinary pulmonary rehabilitation: a randomised controlled trial. <i>Lancet</i> 2000; 355(9201): 362-8. PMID: 10665556.	Study states rehabilitation program was multidisciplinary and included dietetic staff. Dietetic support was offered where appropriate. Excluded due to secondary criteria: Published prior to 2005.
Gronberg AM, Slinde F, Engstrom CP, Hulthen L, Larsson S. Dietary problems in patients with severe chronic obstructive pulmonary disease. <i>J Hum Nutr Diet</i> 2005;18(6):445-52. PMID: 16351703 doi: 10.1111/j.1365-277X.2005.00649.x.	Not relevant to research question; investigated dietary problems in COPD patients and compared to nutritional status, energy intake and smoking habits. Dietitian conducted interview for dietary problems and history, which were analyzed, but no MNT intervention.
Güell Rous MR, Díaz Lobato S, Rodríguez Trigo G, Morante Vélez F, San Miguel M, Cejudo P, Ortega Ruiz F, Muñoz A, Galdiz Iturri JB, García A, Servera E; Sociedad Española de Neumología y Cirugía Torácica (SEPAR). Pulmonary rehabilitation. Sociedad Española de Neumología y Cirugía Torácica (SEPAR). <i>Arch Bronconeumol.</i> 2014 Aug; 50(8): 332-44. doi: 10.1016/j.arbres.2014.02.014. Epub 2014 May 17. PMID: 24845559	Review article.
Günay E, Kaymaz D, Selçuk NT, Ergün P, Sengül F, Demir N. Effect of nutritional status in individuals with chronic obstructive pulmonary disease undergoing pulmonary rehabilitation. <i>Respirology</i> 2013 Nov; 18(8): 1217-22. doi: 10.1111/resp.12133. PMID: 23714353	No MNT intervention by an RDN.
Gupta B, Kant S, Mishra R. Subjective global assessment of nutritional status of chronic obstructive pulmonary disease patients on admission. <i>Int J Tuberc Lung Dis</i> 2010; 14(4):500-5. PMID: 20202310.	Not relevant to research question; assessed nutritional status using the SGA in Indian COPD patients. SGA data were collected by "trained nutritionist", but the study does not evaluate the effectiveness of MNT intervention.
Hallin R, Gudmundsson G, Suppli Ulrik C, et al. Nutritional status and long-term mortality in hospitalised patients with chronic obstructive pulmonary disease (COPD). <i>Respir Med</i> 2007;101(9):1954-60. PMID: 17532198 doi: 10.1016/j.rmed.2007.04.009.	Not relevant to research question; evaluated nutritional status in hospitalized COPD patients and the association between nutritional status and long-term mortality. No MNT intervention by an RDN.
Hallin R, Janson C, Arnardottir RH, et al. Relation between physical capacity, nutritional status and systemic inflammation in COPD. <i>Clin Respir J</i> 2011; 5(3): 136-42. PMID: 21679348 doi: 10.1111/j.1752-699X.2010.00208.x.	Not relevant to research question; examined relations between physical capacity, nutritional status, inflammation and disease severity in COPD; no MNT intervention by an RDN.
Hallin R, Koivisto-Hursti UK, Lindberg E, Janson C. Nutritional status, dietary energy intake and the risk of exacerbations in patients with chronic obstructive pulmonary disease (COPD). <i>Respir Med</i> 2006; 100(3): 561-7. PMID: 16019198 doi: 10.1016/j.rmed.2005.05.020.	Not relevant to research question. Focused on BMI and influence on AECOPD or hospitalizations. A 7-day nutritional intake was recorded, but no MNT intervention by an RDN.
Hoogendoorn M, van Wetering CR, Schols AM, Rutten-van Molken MP. Self-report versus care provider registration of healthcare utilization: impact on cost and cost-utility. <i>Int J Technol Assess Health Care</i> 2009;25(4):588-95. PMID: 19845991 doi: 10.1017/s0266462309990432.	Not relevant to research question; compared the impact of resource use, self-report vs. care provider registrations, on cost and cost utility. No MNT intervention by an RDN.
Hoogendoorn M, van Wetering CR, Schols AM, Rutten-van Molken MP. Is INTERdisciplinary COMMunity-based COPD management (INTERCOM) cost-effective? <i>Eur Respir J</i> 2010; 35(1): 79-87. PMID: 19574331 doi: 10.1183/09031936.00043309.	Publication references the original COMMunity-based COPD management programme (INTERCOM) protocol. However, not all subjects received the MNT intervention by an RDN.
Hougardy DM, Peterson GM, Bleasel MD, Randall CT. Is enough attention being given to the adverse effects of corticosteroid therapy? <i>J Clin Pharm Ther</i> 2000; 25(3): 227-34. PMID: 10886467.	Not relevant to research question; Retrospective chart review on use of corticosteroids (33% COPD patients); included dietary questions, but no MNT intervention by an RDN. Secondary criteria: Published prior to 2005.
Hsu MF, Ho SC, Kuo HP, Wang JY, Tsai AC. Mini-nutritional assessment (MNA) is useful for assessing the nutritional status of patients with chronic obstructive pulmonary disease: a cross-sectional study. <i>COPD</i> 2014; 11(3): 325-32. PMID: 24475999 doi: 10.3109/15412555.2013.863274.	Not relevant to research question; determined the appropriateness of the MNA for assessing nutritional risk of patients with COPD. No MNT intervention by an RDN.
Hu G, Cassano PA. Antioxidant nutrients and pulmonary function: the Third National Health and Nutrition Examination Survey (NHANES III). <i>Am J Epidemiol</i> 2000; 151(10): 975-81. PMID: 10853636.	Not relevant to research question; evaluated effects of vitamin intake through both dietary assessment and serum biomarkers in a representative sample of US population,



Article	Reason for Exclusion <sup>1</sup>
	not COPD alone. No MNT intervention by an RDN. Secondary criteria: Published prior to 2005.
Incalzi RA, Corsonello A, Trojano L, et al. Cognitive training is ineffective in hypoxemic COPD: a six-month randomized controlled trial. <i>Reju Res</i> 2008; 11(1): 239-50. PMID: 18279034 doi: 10.1089/rej.2007.0607.	Not relevant to research question; examined whether cognitive training could preserve cognitive function in hypoxemic COPD patients. Dietetic support was standard of care for both groups, but no MNT intervention by an RDN was evaluated.
Iovinelli G, Marinangeli F, Ciccone A, et al. Parenteral nutrition in ventilated patients with chronic obstructive pulmonary disease: long chain vs medium chain triglycerides. <i>Minerva Anestesiol</i> 2007;73(1-2):65-76. PMID: 17115015.	Critical care setting / ICU (on mechanical ventilation)
Jagoe RT, Goodship TH and Gibson GJ. Nutritional status of patients undergoing lung cancer operations. <i>Ann Thorac Surg.</i> 2001; 71(3): 929-35. PMID: 11269476.	Not relevant to research question; measured nutritional variables and dietary intake of patients referred for curative lung cancer; Control group (N=22) had COPD; no MNT intervention by an RDN. Secondary criteria: published prior to 2005.
Johannessen A, Omenaas ER, Bakke PS, Gulsvik A. Implications of reversibility testing on prevalence and risk factors for chronic obstructive pulmonary disease: a community study. <i>Thorax</i> 2005; 60(10): 842-7. PMID: 16085729 doi: 10.1136/thx.2005.043943.	Not relevant to research question; established COPD prevalence and predictors of GOLD criteria in random general population sample and checked effect of a medication on spirometry values. No MNT intervention by an RDN.
Johnstone C. Linking diet and respiratory distress. <i>Nurs N Z</i> 2001; 7(5): 22-3. PMID: 12012900.	Not a research study; case presentation (N=1). Secondary criteria: Published prior to 2005.
Jonker R, Deutz NE, Erbland ML, Anderson PJ, Engelen MP. Hydrolyzed casein and whey protein meals comparably stimulate net whole-body protein synthesis in COPD patients with nutritional depletion without an additional effect of leucine co-ingestion. <i>Clin Nutr</i> 2014;33(2):211-20. PMID: 23886411 doi: 10.1016/j.clnu.2013.06.014.	Not relevant to research question; study tests whether hydrolyzed casein and whey protein meals increase protein synthesis in COPD patients with nutritional depletion; no MNT intervention by an RDN.
Kan H, Stevens J, Heiss G, Rose KM, London SJ. Dietary fiber, lung function, and chronic obstructive pulmonary disease in the atherosclerosis risk in communities study. <i>Am J Epidemiol</i> 2008;167(5):570-8. PMID: 18063592 doi: 10.1093/aje/kwm343.	Not relevant to research question; investigated association of fiber intake with lung function and COPD (Atherosclerosis Risk in Communities study). No MNT intervention by an RDN.
Keranis E, Makris D, Rodopoulou P, et al. Impact of dietary shift to higher-antioxidant foods in COPD: a randomised trial. <i>Eur Respir J</i> 2010; 36(4): 774-80. PMID: 20150206 doi: 10.1183/09031936.00113809.	Not relevant to research question; reported food-based results by RN and physicians, not RDN; no MNT intervention.
Kerley CP, Cahill K, Bolger K, et al. Dietary nitrate supplementation in COPD: an acute, double-blind, randomized, placebo-controlled, crossover trial. <i>Nitric Oxide</i> 2015; 44: 105-11. PMID: 25534960 doi: 10.1016/j.niox.2014.12.010.	Not relevant to research question; standard beet juice supplement intervention; no MNT intervention by an RDN.
Khan NA, Kumar N, Daga MK. Effect of Dietary Supplementation on Body Composition, Pulmonary Function and Health-Related Quality of Life in Patients with Stable COPD. <i>Tanaffos</i> 2016; 15(4): 225-235. PMID: 28469679	Not relevant to research question; determined if energy and protein supplementation improved outcomes in stable COPD patients. No MNT intervention by an RDN.
Kiongera GM, Houde SC. Inpatient Pulmonary Rehabilitation Program in a Long-Term Care Facility: Short-Term Outcomes and Patient Satisfaction. <i>J Gerontol Nurs</i> 2015;41(8):44-52. PMID: 26248143 doi: 10.3928/00989134-20150622-01.	Included multi-disciplinary program which included nutrition in group setting by "nutritionist." Description is unclear whether individualized counseling was provided and if RDN.
Kubo H, Honda N, Tsuji F, Iwanaga T, Muraki M, Tohda Y. Effects of dietary supplements on the Fischer ratio before and after pulmonary rehabilitation. <i>Asia Pac J Clin Nutr</i> 2006;15(4):551-5. PMID: 17077074.	Less than 10 subjects per study group.
Lange P, Andersen KK, Munch E, et al. Quality of COPD care in hospital outpatient clinics in Denmark: The KOLIBRI study. <i>Respir Med</i> 2009; 103(11): 1657-62. PMID: 19520562 doi: 10.1016/j.rmed.2009.05.010.	Not relevant to research question; examined effect of educational program on COPD care given to staff at outpatient clinics as measured by pre-post audits. Stated occasional "nutritional advice given, if warranted" in audits, but no mention of RDN.
Langmore SE, Skarupski KA, Park PS, Fries BE. Predictors of aspiration pneumonia in nursing home residents. <i>Dysphagia</i> 2002;17(4):298-307. PMID: 12355145 doi: 10.1007/s00455-002-0072-5.	Less than 10 subjects per study group. Secondary criteria: published prior to 2005.
Laviolette L, Lands LC, Daultbaev N, et al. Combined effect of dietary supplementation with pressurized whey and exercise training in chronic obstructive pulmonary disease: a randomized, controlled, double-blind pilot study. <i>J Med Food</i> 2010; 13(3): 589-98. PMID: 20521985 doi: 10.1089/jmf.2009.0142.	Not relevant to research question; evaluated supplement intervention (protein) related to QoL and training/exercise program (endurance). No nutrition outcomes or MNT intervention by an RDN.

Article	Reason for Exclusion <sup>1</sup>
Lee H, Kim S, Lim Y, et al. Nutritional status and disease severity in patients with chronic obstructive pulmonary disease (COPD). <i>Arch Gerontol Geriatr</i> 2013; 56(3): 518-23. PMID: 23352455 doi: 10.1016/j.archger.2012.12.011.	Not relevant to research question; identified the relationship of nutritional status to disease severity. No MNT intervention by an RDN.
Lerario MC, Sachs A, Lazaretti-Castro M, Saraiva LG, Jardim JR. Body composition in patients with chronic obstructive pulmonary disease: which method to use in clinical practice? <i>Br J Nutr</i> 2006; 96(1): 86-92. PMID: 16869955.	Not relevant to research question; compared anthropometry with BIA in relation to DEXA as methods of nutrition assessment and BC. No MNT intervention by an RDN.
Li Y, Feng J, Li Y, Jia W, Qian H. A new pulmonary rehabilitation maintenance strategy through home-visiting and phone contact in COPD. <i>Patient Prefer Adherence</i> 2018 Jan 11;12: 97-104. doi: 10.2147/PPA.S150679. eCollection 2018. PMID: 29391781	Not relevant to research question; investigated home-visit and phone contact strategy for COPD patients. No MNT intervention by an RDN.
Lindroos E, Saarela RK, Soini H, Muurinen S, Suominen MH, Pitkala KH. Caregiver-reported swallowing difficulties, malnutrition, and mortality among older people in assisted living facilities. <i>J Nutr Health Aging</i> 2014; 18(7): 718-22. PMID: 25226112 doi: 10.1007/s12603-014-0467-7.	Not relevant to research question; explored prevalence of swallowing difficulties and association with nutritional status and care, eating habits, and mortality among older adults (not all COPD patients); no MNT intervention by an RDN.
Liu X, Ji Y, Chen J, Li S, Luo F. Circulating visfatin in chronic obstructive pulmonary disease. <i>Nutrition</i> 2009; 25(4): 373-8. PMID: 19056239 doi: 10.1016/j.nut.2008.09.008.	Not relevant to research question; compared visfatin levels, nutritional status, and inflammation markers in COPD patients. No MNT intervention by an RDN.
Loeb M, Neupane B, Walter SD, et al. Environmental risk factors for community-acquired pneumonia hospitalization in older adults. <i>J Am Geriatr Soc</i> 2009; 57(6): 1036-40. PMID: 19467147 doi: 10.1111/j.1532-5415.2009.02259.x.	Not relevant to research question; assessed community acquired pneumonia in older adults but no COPD cohort.
Lopez-Nava G, Rubio MA, Prados S, et al. BioEnterics(R) intragastric balloon (BIB(R)). Single ambulatory center Spanish experience with 714 consecutive patients treated with one or two consecutive balloons. <i>Obes Surg</i> 2011; 21(1): 5-9. PMID: 20306153 doi: 10.1007/s11695-010-0093-3.	Not relevant to research question. Evaluated the effectiveness of a balloon for weight reduction in COPD; no MNT intervention by an RDN.
Lou P, Chen P, Zhang P, et al. A COPD health management program in a community-based primary care setting: a randomized controlled trial. <i>Respir Care</i> 2015; 60(1): 102-12. PMID: 25371402 doi: 10.4187/respcare.03420.	Not relevant to research question; evaluated the efficacy of a COPD health management intervention in rural communities in China. No MNT intervention by an RDN.
Luk JK, Chan WK, Ng WC, et al. Mortality and health services utilisation among older people with advanced cognitive impairment living in residential care homes. <i>Hong Kong Med J</i> 2013; 19(6): 518-24. PMID: 24096360 doi: 10.12809/hkmj133951.	Not relevant to research question; evaluated demography, clinical characteristics, service utilization, and mortality in home care residents. Not all subjects had COPD or other lung disease. No MNT intervention by an RDN.
Mahlin C, von Sydow H, Osmancevic A, et al. Vitamin D status and dietary intake in a Swedish COPD population. <i>Clin Respir J</i> 2014; 8(1): 24-32. PMID: 23711108 doi: 10.1111/crj.12030.	Not relevant to research question; examined effect of dietary vitamin D intake and serum levels of COPD patients. Dietitian assessed dietary intake only. No MNT intervention.
Malaguti C, Napolis LM, Villaca D, Neder JA, Nery LE, Dal Corso S. Relationship between peripheral muscle structure and function in patients with chronic obstructive pulmonary disease with different nutritional status. <i>J Strength Cond Res</i> 2011; 25(7): 1795-803. PMID: 21490512 doi: 10.1519/JSC.0b013e3181e501c1.	Not relevant to research question; examined relationships between muscle mass and function in patients with COPD with differing nutritional status. No MNT intervention by an RDN.
Managing eight chronic diseases with diet. <i>Johns Hopkins Med Lett Health After 50</i> 2003; 15(5): 4-5. PMID: 12838913.	Not a research study. Secondary criteria: published prior to 2005.
Malik MN, Shafqat W, Sohail S, Imtiaz S. Malnutrition assessment of chronic obstructive pulmonary disease patients. <i>Medical Forum Monthly</i> 2011;22:9-13	Not relevant to research question; study examines prevalence and severity of malnutrition.
Man WD, Polkey MI, Donaldson N, Gray BJ, Moxham J. Community pulmonary rehabilitation after hospitalisation for acute exacerbations of chronic obstructive pulmonary disease: randomised controlled study. <i>BMJ (Clinical research ed.)</i> . 2004; 329(7476): 1209-1209. Accession Number: CN-00492403.	Study evaluated the effects of a community-based pulmonary rehab program and included MNT by an RDN; excluded due to secondary criteria: published prior to 2005.
Marchesani F, Valerio G, Dardes N, Viglianti B, Sanguinetti CM. Effect of intravenous fructose 1,6-diphosphate administration in malnourished chronic obstructive pulmonary disease patients with chronic respiratory failure. <i>Respiration</i> 2000;67(2):177-82. PMID: 10773790 doi: 29483.	Not relevant to research question; evaluated effect of organic phosphate administration on respiratory performance. No MNT intervention by an RDN. Secondary criteria: published prior to 2005.
Martineau AR, James WY, Hooper RL, et al. Vitamin D3 supplementation in patients with chronic obstructive pulmonary disease (ViDiCO): a multicentre, double-blind, randomised controlled trial. <i>Lancet Respir Med</i> 2015; 3(2): 120-30. PMID: 25476069 doi: 10.1016/s2213-2600(14)70255-3.	Not relevant to research question; tested effect of vitamin D supplement on incidence of moderate to severe AECOPD or respiratory infection. No MNT intervention by an RDN.
McKinstry A, Tranter M, Sweeney J. Outcomes of dysphagia intervention in a pulmonary rehabilitation program. <i>Dysphagia</i> 2010; 25(2): 104-11. PMID: 19618132 doi: 10.1007/s00455-009-9230-3.	While dietitian was part of multi-disciplinary team intervention, not all subjects had COPD. No separate analysis of those with/without COPD.

Article	Reason for Exclusion <sup>1</sup>
McKeever TM, Lewis SA, Smit HA, Burney P, Cassano PA, Britton J. A multivariate analysis of serum nutrient levels and lung function. <i>Respir Res</i> 2008; 9:67. PMID: 18823528 doi: 10.1186/1465-9921-9-67.	Not relevant to research question; assessed association of serum markers of nutritional status with lung function in a US population base, no COPD cohort.
Meis JJ, Bosma CB, Spruit MA, et al. A qualitative assessment of COPD patients' experiences of pulmonary rehabilitation and guidance by healthcare professionals. <i>Respir Med</i> 2014; 108(3): 500-10. PMID: 24280544 doi: 10.1016/j.rmed.2013.11.001.	Less than 10 subjects per study group.
Mekal D, Doboszynska A, Kadalska E, Swietlik E, Rudnicka L. Nutritional status in chronic obstructive pulmonary disease and systemic sclerosis: two systemic diseases involving the respiratory system. <i>Adv Exp Med Biol</i> 2015; 840: 45-9. PMID: 25310942 doi: 10.1007/5584_2014_19.	Not relevant to research question; comparison between COPD and systemic sclerosis. No MNT intervention by an RDN.
Mineo D, Ambrogi V, Lauriola V, Pompeo E, Mineo TC. Recovery of body composition improves long-term outcomes after lung volume reduction surgery for emphysema. <i>Eur Respir J</i> 2010; 36(2): 408-16. PMID: 20675780 doi: 10.1183/09031936.00142309.	Not relevant to research question; studied BC and relationship to respiratory dynamics after lung reduction surgery. No MNT intervention by an RDN.
Mineo TC, Pompeo E, Mineo D, Ambrogi V, Ciarapica D, Polito A. Resting energy expenditure and metabolic changes after lung volume reduction surgery for emphysema. <i>Ann Thorac Surg</i> 2006; 82(4): 1205-11. PMID: 16996909 doi: 10.1016/j.athoracsur.2006.05.030.	Not relevant to research question; hypothesized that LVRS may improve EE and metabolism. No MNT intervention by an RDN.
Muller U, Jungblut S, Frickmann H, Bargon J. Assessment of body composition of patients with COPD. <i>Eur J Med Res</i> 2006; 11(4): 146-51. PMID: 16720278.	Not relevant to research question; determined nutritional state and body cell mass in patients with COPD. No MNT intervention by an RDN.
Nava S, Fuccella LM, Viglianti B. Physiological effects of intravenous fructose 1.6-diphosphate on diaphragmatic function in malnourished patients with COPD. <i>Monaldi Arch Chest Dis</i> 2004; 61(4): 203-8. PMID: 15909609.	Not relevant to research question; evaluated fructose supplement vs. placebo. No MNT intervention by an RDN. Secondary criteria: published prior to 2005.
Neupane B, Walter SD, Krueger P, Marrie T, Loeb M. Predictors of in-hospital mortality and re-hospitalization in older adults with community-acquired pneumonia: a prospective cohort study. <i>BMC Geriatr</i> 2010; 10:22. PMID: 20459844 doi: 10.1186/1471-2318-10-22.	Not relevant to research question; evaluated potentially modifiable factors with mortality and re-hospitalization in older adults with pneumonia. Data were reported separately for COPD patients. No MNT intervention by an RDN.
Ngaage DL, Hasney K, Cowen ME. The functional impact of an individualized, graded, outpatient pulmonary rehabilitation in end-stage chronic obstructive pulmonary disease. <i>Heart Lung</i> 2004; 33(6): 381-9. PMID: 15597292.	Evaluated impact of an individualized outpatient pulmonary rehab program and MNT provided by a dietitian. Secondary criteria: published prior to 2005.
Ng TP, Niti M, Yap KB, Tan WC. Curcumins-rich curry diet and pulmonary function in Asian older adults. <i>PLoS One</i> 2012; 7(12): e51753. PMID: 23300564 doi: 10.1371/journal.pone.0051753.	Not all subjects had COPD; population-based study.
Nici, L. Pulmonary rehabilitation: role and advances. <i>Seminars in Respiratory &amp; Critical Care Medicine</i> , 2009;30(6), 627-628.	Not a research study.
Norden J, Gronberg AM, Bosaeus I, et al. Nutrition impact symptoms and body composition in patients with COPD. <i>Eur J Clin Nutr</i> 2015;69(2):256-61. PMID: 24801370 doi: 10.1038/ejcn.2014.76.	Not relevant to research question; investigated NIS in patients with COPD and to explore relationships between NIS and FFM depletion. Dietitians developed questionnaire/interpreted answers, but no MNT intervention.
Obase Y, Mouri K, Shimizu H, et al. Nutritional deficits in elderly smokers with respiratory symptoms that do not fulfill the criteria for COPD. <i>Int J Chron Obstruct Pulmon Dis</i> 2011; 6: 679-83. PMID: 22259244 doi: 10.2147/ copd.s25293.	Subjects had lung condition that is not COPD. Studied nutritional deficits in smokers not diagnosed with COPD.
Odenrants S, Bjustrom T, Wiklund N, Blomberg K. Nutritional status, gender and marital status in patients with chronic obstructive pulmonary disease. <i>J Clin Nurs</i> 2013; 22(19-20): 2822-9. PMID: 23675677 doi: 10.1111/j. 12222.	Not relevant to research question; compared nutritional status, lung function, gender and marital status in patients with COPD to predict malnutrition. No MNT intervention by an RDN.
Odenrants S, Ehnfors M, Grobe SJ. Living with chronic obstructive pulmonary disease: part I. Struggling with meal-related situations: experiences among persons with COPD. <i>Scand J Caring Sci</i> 2005;19(3): 230-9. PMID: 16101851 doi: 10.1111/j.1471-6712.2005.00345.x.	Not relevant to research question; qualitative study of feelings while eating. No MNT intervention by an RDN.
Planas M, Alvarez J, Garcia-Peris PA, et al. Nutritional support and quality of life in stable chronic obstructive pulmonary disease (COPD) patients. <i>Clin Nutr</i> 2005; 24(3): 433-41. PMID: 15896431 doi: 10.1016/j.clnu.2005.01.005.	Not relevant to research question; examined effect of a supplement on QoL. No MNT intervention or RDN identified.
Pouw EM, Ten Velde GP, Croonen BH, Kester AD, Schols AM, Wouters EF. Early non-elective readmission for chronic obstructive pulmonary disease is	Not relevant to research question; compared REE, RQ and BC between patients with and without COPD; no MNT

Article	Reason for Exclusion <sup>1</sup>
associated with weight loss. <i>Clin Nutr</i> 2000; 19(2): 95-9. PMID: 10867726 doi: 10.1054/clnu.1999.0074.	intervention by an RDN. Secondary criteria: published prior to 2005.
Raizada N, Daga, M, Kumar N, Mathur, S. Nutritional intervention in stable COPD patients and its effect on anthropometry, pulmonary function, and health-related quality of life (HRQL). <i>J Indian Acad Clin Med</i> 2014;15:100-5.	Not relevant to research question; evaluated nutritional status of stable COPD patients and effect of nutritional supplementation on outcomes. No MNT intervention by an RDN.
Ramires BR, de Oliveira EP, Pimentel GD, et al. Resting energy expenditure and carbohydrate oxidation are higher in elderly patients with COPD: a case control study. <i>Nutr J</i> 2012; 11:37. PMID: 22672689 doi: 10.1186/1475-2891-11-37.	Not relevant to research question; compared REE, RQ and BC between patients with and without COPD. No MNT intervention by an RDN.
Rao ZY, Wu XT, Wang MY, Hu W. Comparison between measured and predicted resting energy expenditure in mechanically ventilated patients with COPD. <i>Asia Pac J Clin Nutr</i> 2012; 21(3): 338-46. PMID: 22705422.	Critical care setting / ICU (on mechanical ventilation).
Renvall MJ, Friedman P, Ramsdell JW. Predictors of body mass index in patients with moderate to severe emphysema. <i>COPD</i> 2009; 6(6): 432-6. PMID: 19938965 doi: 10.3109/15412550903433034.	Not relevant to research question; examined relationship between BMI and degree of COPD and calorie intakes. RDNs were involved, but MNT intervention was not evaluated.
Rutten EP, Franssen FM, Engelen MP, Wouters EF, Deutz NE, Schols AM. Greater whole-body myofibrillar protein breakdown in cachectic patients with chronic obstructive pulmonary disease. <i>Am J Clin Nutr</i> 2006; 83(4): 829-34. PMID: 16600935.	Less than 10 subjects per study group.
Sabino PG, Silva BM, Brunetto AF. Nutritional status is related to fat-free mass, exercise capacity and inspiratory strength in severe chronic obstructive pulmonary disease patients. <i>Clinics</i> (Sao Paulo). 2010; 65(6): 599-605. PMID: 20613936 doi: 10.1590/s1807-59322010000600007.	Not relevant to research question; investigated the impact of nutritional status on BC, exercise capacity and respiratory muscle strength in COPD patients. No MNT intervention by an RDN.
Schols AM. Nutritional rehabilitation: from pulmonary cachexia to sarcoPD. <i>Eur Respir J</i> 2009 May;33(5): 949-50. doi: 10.1183/09031936.00011209. PMID: 19407044	Not a research study (editorial - no outcomes of interest).
Senda K, Satake S, Kondo I, Shibasaki M, Nishikawa M, Nakashima K Endo H, Toba K. Nutritional status and sarcopenia in Japanese elder patients with chronic obstructive pulmonary disease undergoing comprehensive pulmonary rehabilitation. <i>Clin Nutr</i> , 2012; Supplement, 7(1), 58.	Not a research study (poster presentation).
Shalit N, Tierney A, Holland A, Miller B, Norris N, King S. (2016). Factors that influence dietary intake in adults with stable chronic obstructive pulmonary disease. <i>Nutrition &amp; Dietetics</i> 2016; 273(5), 455-462.	Not relevant to research question; identified factors that influence dietary intake patterns in a COPD population. No MNT intervention by an RDN.
Shi R, Duan J, Deng Y, et al. Nutritional status of an elderly population in Southwest China: a cross-sectional study based on comprehensive geriatric assessment. <i>J Nutr Health Aging</i> 2015; 19(1): 26-32. PMID: 25560813 doi: 10.1007/s12603-014-0471-y.	Not relevant to research question; described nutritional status and clinical correlates for malnutrition risk in geriatric population. Not all had COPD. No MNT intervention by an RDN.
Singer T. Nutrition: The vitamin D complex. <i>Nature</i> 2012; 489(7417): S10-1. PMID: 23013708 doi: 10.1038/489S10a.	Not a research study.
Slinde F, Ellegard L, Gronberg AM, Larsson S, Rossander-Hulthen L. Total energy expenditure in underweight patients with severe chronic obstructive pulmonary disease living at home. <i>Clin Nutr</i> 2003; 22(2): 159-65. PMID: 12706133.	Not relevant to research question; assessed daily TEE, using DLW and described this in home-living underweight patients with severe COPD. No MNT intervention by RDN. Secondary criteria: published prior to 2005.
Slinde F, Gronberg AM, Engstrom CR, Rossander-Hulthen L, Larsson S. Individual dietary intervention in patients with COPD during multi-disciplinary rehabilitation. <i>Respir Med</i> 2002; 96(5): 330-6. PMID: 12113383.	Evaluated the effect of dietary intervention in COPD patients in a multidisciplinary rehab program. MNT intervention was evaluated and performed by a dietitian. Secondary criteria: published prior to 2005.
Slinde F, Kvarnhult K, Gronberg AM, Nordenson A, Larsson S, Hulthen L. Energy expenditure in underweight chronic obstructive pulmonary disease patients before and during a physiotherapy programme. <i>Eur J Clin Nutr</i> 2006; 60(7): 870-6. PMID: 16452911 doi: 10.1038/sj.ejcn.1602392.	Not relevant to research question; investigated how TEE changes when underweight COPD enters a physiotherapy program. No MNT intervention by an RDN.
Snider JT, Jena AB, Linthicum MT, et al. Effect of hospital use of oral nutritional supplementation on length of stay, hospital cost, and 30-day readmissions among Medicare patients with COPD. <i>Chest</i> 2015; 147(6): 1477-84. PMID: 25357165 doi: 10.1378/chest.14-1368.	Not relevant to research question; compared impact of ONS consumption on readmission risk, LOS, and cost among COPD patients on Medicaid, using database. No MNT intervention by RDN.
Steiner MC, Barton RL, Singh SJ, Morgan MD. Nutritional enhancement of exercise performance in chronic obstructive pulmonary disease: a randomised controlled trial. <i>Thorax</i> 2003; 58(9): 745-51. PMID: 12947128.	Not relevant to research question; evaluated CHO supplement effect on COPD patients in rehab program and effect on exercise performance. No MNT intervention by an RDN. Secondary criteria: Published prior to 2005.



Article	Reason for Exclusion <sup>1</sup>
Sugawara K, Takahashi H, Kasai C, et al. Effects of nutritional supplementation combined with low-intensity exercise in malnourished patients with COPD. <i>Respir Med</i> 2010; 104(12): 1883-9. PMID: 20627502 doi: 10.1016/j.rmed.2010.05.008.	Not relevant to research question; Investigated effects of a nutrition supplement in a home-based pulmonary rehab program. No MNT intervention or dietitian involvement.
Sugawara K, Takahashi H, Kashiwagura T, et al. Effect of anti-inflammatory supplementation with whey peptide and exercise therapy in patients with COPD. <i>Respir Med</i> 2012; 106(11): 1526-34. PMID: 22857881 doi: 10.1016/j.rmed.2012.07.001.	Not relevant to research question; investigated the effectiveness of ONS (containing whey peptide) with low-intensity exercise patients with COPD. No MNT intervention by an RDN.
Sund-Levander M, Grodzinsky E, Wahren LK. Gender differences in predictors of survival in elderly nursing-home residents: a 3-year follow up. <i>Scand J Caring Sci</i> 2007; 21(1): 18-24. PMID: 17428210 doi: 10.1111/j.1471-712.2007.00431.x.	Not relevant to research question; examined mortality risk from pneumonia. Not all subjects had COPD.
Sundh J, Lindgren H, Hasselgren M, Montgomery S, Janson C, Ställberg B, Lisspers K. Pulmonary rehabilitation in COPD - available resources and utilization in Swedish primary and secondary care. <i>Int J Chron Obstruct Pulmon Dis</i> 2017 Jun 8;12: 1695-1704. PMID: 28652722 doi: 10.2147/COPD.S135111. eCollection 2017.	Review article.
Suzana S Jr, Hanis MY, Tang SY, Ayiesah R, Roslina AM. Changes in Nutritional, Functional Status and Quality of Life of COPD Out-patients after a Pulmonary Rehabilitation Programme in HUKM: a Pilot Study. <i>Malays J Nutr</i> 2008 Sep; 14(2): 151-62. PMID: 22691772. Epub 2008 Sep 15.	Less than 10 subjects per study group. Nutrition intervention provider not stated.
Tanchoco CC, Castro CA, Villadolid MF, et al. Enteral feeding in stable chronic obstructive pulmonary disease patients. <i>Respirology</i> 2001; 6(1):43-50. PMID: 11264762.	Less than 10 subjects per study group. Secondary criteria: published prior to 2005.
Theander K, Jakobsson P, Jorgensen N, Unosson M. Effects of pulmonary rehabilitation on fatigue, functional status and health perceptions in patients with chronic obstructive pulmonary disease: a randomized controlled trial. <i>Clin Rehabil</i> 2009; 23(2): 125-36. PMID: 19164400 doi: 10.1177/0269215508096174.	No description of the role of the dietitian; no MNT intervention by an RDN.
Tümer G, Mercanligil SM, Uzun O and Aygün C. The effects of a high-fat, low-carbohydrate diet on the prognosis of patients with an acute attack of chronic obstructive pulmonary disease. <i>Turkiye Klinikleri Journal of Medical Sciences</i> . 2009; 29(4): 895-904 10p. Accession Number: 105317630	Not relevant to research question; examined effects of high-fat low-CHO diet on prognosis of patients hospitalized for AECOPD; effect of MNT intervention by an RDN not evaluated.
Valero C, Monteagudo M, Llagostera M, et al. Evaluation of a combined strategy directed towards health-care professionals and patients with chronic obstructive pulmonary disease (COPD): information and health education feedback for improving clinical monitoring and quality-of-life. <i>BMC Public Health</i> 2009; 9:442. PMID: 20128887 doi: 10.1186/1471-2458-9-442.	Health care professionals were trained to provide diet counseling. No specific statement of dietitian involvement and no MNT intervention was evaluated.
van de Bool C, Rutten EPA, van Helvoort A, Franssen FME, Wouters EFM, Schols AMWJ. A randomized clinical trial investigating the efficacy of targeted nutrition as adjunct to exercise training in COPD. <i>J Cachexia Sarcopenia Muscle</i> . 2017 Oct; 8(5): 748-758. PMID: 28608438 doi: 10.1002/jcsm.12219. Epub 2017 Jun 12.	No MNT intervention by an RDN.
van de Bool C, Mattijssen-Verdonschot C, van Melick PP, et al. Quality of dietary intake in relation to body composition in patients with chronic obstructive pulmonary disease eligible for pulmonary rehabilitation. <i>Eur J Clin Nutr</i> 2014; 68(2): 159-65. PMID: 24327123 doi: 10.1038/ejcn.2013.257.	Not relevant to research question; investigated dietary intake in relation to low FFM and abdominal obesity in COPD; no MNT intervention by an RDN.
van Wetering CR, Hoogendoorn M, Mol SJ, Rutten-van Mülken MP, Schols AM. Short- and long-term efficacy of a community-based COPD management programme in less advanced COPD: a randomised controlled trial. <i>Thorax</i> 2010; 65(1): 7-13. Accession Number: CN-00743144.	Publication references the original COMMunity-based COPD management programme (INTERCOM) protocol. Not all subjects received the MNT intervention by an RDN.
Vermeeren MA, Wouters EF, Geraerts-Keeris AJ, Schols AM. Nutritional support in patients with chronic obstructive pulmonary disease during hospitalization for an acute exacerbation; a randomized controlled feasibility trial. <i>Clin Nutr</i> 2004; 23(5): 1184-92. PMID: 15380912 doi: 10.1016/j.clnu.2004.03.008.	Not relevant to research question; investigated the feasibility and effectiveness of nutritional supplements during AECOPD patients. Effect of MNT intervention by an RDN was not evaluated. Secondary criteria: published prior to 2005.
Vermeeren MAP, Wouters EF, Nelissen LH, van Lier A, Hofman Z, Schols AM. Acute effects of different nutritional supplements on symptoms and functional capacity in patients with chronic obstructive pulmonary disease. <i>Amer J Clin Nutr</i> . 2001; 73(2):295-301 7p. Accession Number: 107020500.	Not relevant to research question; Tested effects of different energy loads and an isocaloric ONS. Effect of MNT intervention by an RDN was not evaluated. Secondary criteria: Published prior to 2005.
Villaca DS, Lerario MC, dal Corso S, et al. Clinical value of anthropometric estimates of leg lean volume in nutritionally depleted and non-depleted patients	Not relevant to research question; investigated a method for estimating leg lean volume in COPD patients with and without nutritional depletion. BC measurements were

Article	Reason for Exclusion <sup>1</sup>
with chronic obstructive pulmonary disease. <i>Br J Nutr</i> 2008;100(2): 380-6. PMID: 18184453 doi: 10.1017/s0007114507886399	performed by a nutritionist/ dietitian, but no MNT intervention was evaluated.
Vitacca M, Paneroni M, Peroni R, et al. Effects of a multidisciplinary care program on disability, autonomy, and nursing needs in subjects recovering from acute respiratory failure in a chronic ventilator facility. <i>Respir Care</i> 2014; 59(12): 1863-71. PMID: 25185151 doi: 10.4187/respcare.03030.	Not relevant to research question; analyzed effects of a multidisciplinary program on disability, autonomy, and nursing needs after ICU stay. N=71 of 240 subjects had COPD. No MNT intervention by an RDN.
von Leupoldt A, Hahn E, Taube K, Schubert-Heukeshoven S, Magnussen H and Dahme B. Effects of 3-week outpatient pulmonary rehabilitation on exercise capacity, dyspnea, and quality of life in COPD. <i>Lung</i> 2008; 186(6): 387-91. PMID: 18408968 doi: 10.1007/s00408-008-9089-3.	Intervention was pulmonary rehab that included nutrition counseling. Nutrition provider was not specified; no MNT intervention by an RDN.
Wang Y, Shen Y, Zuo Q, et al. Evaluation of ghrelin level and appetite regulation in patients with acute exacerbations of chronic obstructive pulmonary disease. <i>Int J Chron Obstruct Pulmon Dis</i> 2014; 9: 863-70. PMID: 25152618 doi: 10.2147/copd.s65195.	Not relevant to research question; tested correlation of appetite and circulating levels of acylated ghrelin in patients with AECOPD. No MNT intervention by an RDN.
Woo J, Chan W, Yeung F, et al. A community model of group therapy for the older patients with chronic obstructive pulmonary disease: a pilot study. <i>J Eval Clin Pract</i> 2006; 12(5): 523-31. PMID: 16987114 doi: 10.1111/j.1365-2753.2006.00651.x.	Not relevant to research question; intervention was a program of talks conducted by a research assistant with medical knowledge or physio-therapist; no MNT intervention by an RDN.
Yilmaz D, Çapan N, Canbakan S, Besler HT. Dietary intake of patients with moderate to severe COPD in relation to fat-free mass index: a cross-sectional study. <i>Nutr J</i> 2015 Apr 10;14:35. PMID: 25855019 doi: 10.1186/s12937-015-0020-5.	Not relevant to research question; assessed the nutritional status of stable COPD patients in relation to FFMI profiles. No MNT intervention by an RDN.
Yoneda T, Yoshikawa M, Fu A, Tsukaguchi K, Okamoto Y and Takenaka H. Plasma levels of amino acids and hypermetabolism in patients with chronic obstructive pulmonary disease. <i>Nutrition</i> 2001; 17(2):95-9. PMID: 11240335.	Not relevant to research question; measured nutritional status, lung function, EE and plasma BCAAs. No MNT intervention by an RDN. Secondary criteria: published prior to 2005.
Yoshikawa M, Fujita Y, Yamamoto Y, et al. Mini Nutritional Assessment Short-Form predicts exacerbation frequency in patients with chronic obstructive pulmonary disease. <i>Respirology</i> 2014;19(8): 1198-203. PMID: 25208631 doi: 10.1111/resp.12380.	Not relevant to research question; determined if nutritional status (assessed by MNA-SF) predicts AECOPD and compared MNA-SF to CAT to predict AECOPD. No MNT intervention by an RDN.
Zakrisson AB, Theander K and Anderzen-Carlsson A. The experience of a multidisciplinary programme of pulmonary rehabilitation in primary health care from the next of kin's perspective: a qualitative study. <i>Prim Care Respir J</i> . 2013;22(4):459-65. PMID: 24301859 doi: 10.4104/perj.2013.00094.	Subjects did not have COPD. Qualitative study of perceptions of pulmonary rehab in next of kin.
Zanotti E, Berardinelli P, Bizzarri C, et al. Osteopathic manipulative treatment effectiveness in severe chronic obstructive pulmonary disease: a pilot study. <i>Complement Ther Med</i> . 2012; 20(1-2): 16-22. PMID: 22305244 doi: 10.1016/j.ctim.2011.10.008.	Nutrition counseling was part of standard pulmonary rehab that both groups received; nutrition provider was not stated. No MNT intervention evaluated.

<sup>1</sup>**Abbreviations:** AECOPD=acute exacerbation of COPD; BCAA=branched chain amino acids; BC=body composition; BIA=bioelectrical impedance analysis; BMI=body mass index; CHO=carbohydrate; CAT=COPD Assessment Test; COPD=chronic obstructive pulmonary disease; DEXA=dual-energy X-ray absorptiometry; DLW=doubly labeled water; EE=energy expenditure; FFM=fat-free mass; FFMI=fat-free mass index; ICU=intensive care unit; LOS=length of stay; LVRS=lung volume reduction surgery; MNT=medical nutrition therapy; MNA=Mini Nutrition Assessment; MNA-SF=Mini Nutrition Assessment-Short Form; NIS=nutrition impact symptoms; ONS=oral nutritional supplement; QoL=quality of life; RDN=registered dietitian nutritionist; REE=resting energy expenditure; RN=registered nurse; RQ=respiratory quotient; SGA=Subjective Global Assessment; TEE=total energy expenditure.